# A SYSTEMATIC APPROACH TO FACULTY'S BLENDED COURSE DESIGN

By
Justin Zephyrine

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## Abstract

The benefits of online and blended modes of delivery have been studied extensively in higher education. Institutions, like the University of the West Indies, have sought to materialize these benefits in their contexts but have encountered problems, sometimes due to issues with educational policies, faculty skillsets, resources and support. To explore this further, this study examined faculty attitudes to, and efficacy in, blended course designs. Using a mixed methods approach, the study investigated the changes in faculty's attitudes and efficacy in blended course designs following their participation in a 5-week blended training course. The course comprised a series of developmental activities that included collaborative projects, reflective journals and hands-on experience with various technology tools. Participants were introduced to the Technological Pedagogical and Content Knowledge (TPACK) and Community of Inquiry (COI) frameworks, which they used as they developed an instructional sequence that would be used to inform a new systematic approach to their blended course designs by the end of the course. Data collection comprised three phases. In the pre-treatment, the TPACK survey and Open SUNY Course Quality Review (OSCQR) rubric/course reviews were used. In the mid-treatment phase, reflective journals were used. The TPACK survey and course reviews with the OSCQR rubric were used in the post-treatment phase. The findings indicated that participants' attitudes changed as they felt more knowledgeable and confident in designing blended courses and used a more systematic approach to their course designs following the treatment. While the quantitative data indicated the apparent changes in participants' attitudes and efficacy in a systematic approach to blended course

designs, the qualitative data indicated the elements of the treatment, such as the use of collaborative approaches and clinics, which led to the changes.

*Keywords:* blended learning, a systematic approach, blended course designs, COI, TPACK

Dissertation Advisor: Dr. Wendy Drexler

Committee Members: Dr Keish Valdez and Dr. Christine Eith

# Signature Page

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## Dedication

This dissertation is dedicated to my parents – Victor and Earleen Zephyrine. My parents have instilled in me lifelong skills and values. These include self-confidence, faith, diligence, discipline, perseverance, honesty, ethics and integrity. These skills and values have taken me through my journey of life thus far, and have been pertinent to the completion of my doctoral studies and dissertation. Both of my parents have been a source of encouragement, wisdom and guidance throughout this experience. There were many times I wanted to give up and cave under the pressure or demands of this doctoral journey. But soon after allowing me to vent my frustration within healthy means, they would provide wise and Godly counsel, and assist me back on track. I thank my father for going through the painstaking task of reviewing my chapters repeatedly and sometimes at a moment's notice, and putting up with the stress of identifying and correcting my grammatical errors along the way. I definitely needed his eagle eyes. I thank my mother for her advice and for keeping me on task even in the seemingly little steps along the way.

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## 1.1 Introduction

The University of the West Indies (UWI) has been a premiere institution for higher education in the Caribbean for seventy years (Thurab-Nkhosi, 2013; Edwards-Henry et al., 2006). Comprising four campuses, the institution has become the largest university offering undergraduate and graduate programs in the region. It has three face-to-face campuses, in Jamaica, Barbados and Trinidad. The fourth location is a virtual campus which offers programs that are solely online. The physical campuses also offer blended programs. The St. Augustine campus has become the largest of all four campuses with an estimate of 25,000 students and approximately 500 faculty members.

Over the last two decades, the institution has sought to incorporate technology to facilitate its growing student population and to enhance its practices regarding the teaching and learning process. Examples of this can be seen in the campus' acquisition of various online learning management systems (LMSs) such as *Web CT* and *Moodle*. However, despite its provision of these online platforms and hardware, and the emergence of a plethora of freeware such as social networking sites, mobile applications, cloud computing media and other technologies for 21st century education, these platforms appear to remain underutilized by faculty. Because of the need to improve students' academic performance, this phenomenon has indicated the need to develop the faculty's skillset in teaching and learning with technology, and has therefore prompted the campus's senior management to implement a policy for blended learning. Behind this policy is the desire to increase and improve faculty's use of technology in their teaching

through training and development initiatives, thereby improving students' academic performance. However, this seems to have only accomplished moderate to minimal success or impact as it is believed that faculty members have not fully bought into the initiative and also may lack the skill set to teach with technology in a blended environment (Edwards-Henry et al., 2006).

## 1.2 Problem of Practice

According to research by Sahin (2009), Oblinger (2005), Gagne (1985), and Clark (1983), the application of instructional design principles is paramount in the effective use of technology for teaching and learning in a blended environment. The use of these principles to blended course designs is often indicated by a systematic or methodical approach to the integration of technology with instruction and course sites (Hooper & Rieber, 1995; Hrastinski, 2008; Garrison, 2017). This systems approach comprises several identifiable elements. However, it appears that members of faculty at the UWI adopt a more arbitrary approach, sometimes randomly using technology tools (if any) in their instruction without a clearly defined design plan or preparation process.

The Problem of Practice (POP) is the lack of a systematic approach in faculty's blended course designs. This has affected students' academic performances as well as the successful implementation of the senior management's policy for blended learning on the campus (Edwards-Henry et al., 2006). There are several possible underlying causes for this POP which may include inadequate faculty professional development, limited resources, the student profile, and senior management's policies and initiatives. The theoretical perspectives and conceptual framework further help to understand the problem and these possible underlying factors.

## 1.3 Theoretical Perspectives

Several key theoretical perspectives and frameworks provide an underpinning for this research.

### 1.3.1 Social Constructivism

Initially proposed by Piaget (1972), constructivism conveys the notion that learning is not only a process but is an experience. It is a learning theory and teaching approach that "equates learning with creating meaning from experience" (Bednar et al, 1991). It provides further insight to the ways in which a learner learns or accommodates new information and constructs new meaning. Unlike its theoretical predecessors such as Behaviorism and Cognitivism which emphasize teaching and learning as a process, Constructivism views teaching and learning as an experience where the learner receives input from the world or environment (people and experiences) and processes this to construct new meaning, new knowledge or a new interpretation. Considering this, Ertmer and Newby (1993) believe that knowledge stems from one's interpretation of one's experiences and that "humans create meaning as opposed to acquiring it" (p. 62).

One of the central tenets of Social Constructivism is that teaching and learning is not a passive process, but is an experience in which the learner is actively engaged. To this end, von Glasserfeld (1982) posits "knowledge is not passively received but actively built up by the cognizing subject" (1982, p. 182). Additionally, Ernest states that "knowing is active, that it is individual and personal and that it is based on previously constructed knowledge" (2010, p. 40). As such, the learner becomes an active participant as opposed to a passive recipient of knowledge in the teaching and learning process. The role of the teacher is to facilitate students' learning by creating an avenue for students to

interact with their world through peer-collaboration, for example, chunking and scaffolding (von Glasserfeld, 2005). Students do the learning, but the teacher facilitates this experience by providing guidance, creating a learning environment, and making the learning authentic by connecting it to the social context of his/her students.

Constructivism can play a significant role in this research which focuses on faculty's blended course designs. It advocates the effective use of technology in accordance with pedagogical principles and research. More than providing a theoretical underpinning for instructional practices, it can serve as an indicator of the possible underlying or causal factors of the POP.

### 1.3.2 Social Cognitive Theory

While teaching and learning is a socially active experience, the cognitive processes that occur during this experience should not be overlooked. According to Bandura (1986), teachers' behaviors do not occur in isolation but are heavily influenced by other factors such as the external environments, thoughts or personal beliefs and behaviors, which are inter-relational. This theory expounds on the gap between the individual or faculty (thoughts, beliefs, self-concepts, perceptions and other internal constructs) and the environment (human behaviors, interaction and other external manifestations). In so doing, it helps to explain how the external environment can affect human thought or constructs, and vice versa. This is also known as reciprocal determinism (Bandura, 1986). In the context of the POP, human thoughts or constructs refer almost exclusively to the attitudes or perceptions of faculty and other stakeholders, which can impact their efficacy regarding technology in education. Within this theory,

two primary processes that may be applicable to the POP are metacognition and reciprocal determinism.

According to Flavell (1979), metacognition is an awareness of the cognitive processes an one uses to make sense of the environment. He distinguishes two components of metacognition; metacognitive knowledge (which is an acquired awareness and possible control of cognitive processes) and metacognitive experiences (feelings and evaluations regarding specific pieces of knowledge or information). One of the major things in his discourse on metacognitive knowledge is the subcategorization of differences into intra-individual, inter-individual and universal. The first two of these may be relevant to the POP as they pertain to an individual's conceptualization of the acquisition of a particular body of knowledge and expertise or skill, for example, blended course designs and blended learning. This theory and concept may account for the problem of hesitation shared by groups of faculty towards the use of technology in their courses (Minnaar, 2012).

Applying Flavell's (1979) tenets of metacognition, the comradery amongst faculty based on their shared hesitation toward blended course designs can be identified as an example of metacognitive knowledge associated with the variable of person (Minnaar, 2012). This essentially refers to what persons know about themselves and others as indicators towards a particular task or goal such as blended instruction. Inherent in this situation is the metacognitive knowledge variable of task. This refers to the nature of the task (such as the conversion of courses to a blended format) and the demands that it places upon faculty. These may include the faculty's training in technology integration

into education, acquiring new skills, scheduling and devotion of time to the tasks, reviewing of instructions, course designs and assessments.

Faculty, however, seem to lack the final metacognitive variable of strategy which, according to Flavell (1979) and Minnaar (2012), refers to the tactics or approaches in accomplishing the goal for blended course design or course conversion. Even with the provision of opportunities for training, faculty can remain absolute in their views and hesitation towards blended course designs. As such, many of the faculty's courses and teaching approaches remain antiquated and/or arbitrary – hence the significance of this POP. Flavell's (1979) concept of metacognition and its sub-classifications or variables therefore help in understanding the POP from a social cognitivist perspective.

Bandura (1986) adds to this understanding through the concept or approach of triadic reciprocal determinism. While Flavell (1979) focuses more on the internal (metacognition), Bandura emphasizes the relationship between an individual's internal (cognitive) and external environments. Bandura expounds on how much individuals are responsive to external stimuli (and vice versa), and as previously mentioned, this has significant potential for the POP as it pertains to faculty perceptions and efficacy in blended course designs. In his discourse on reciprocal determinism, Bandura (1986) advocates the need for a learner-centered environment that is conducive to learners (or faculty in this case) and their behavior or use of technology.

Bandura's emphasis on the need for the learner to interact with the environment seems to resonate with the views of Social Constructivists and Cognitivists such as Bruning, Schraw and Norby (2011) that "learning is constructive, not a receptive process" (p. 5). Bandura's (1986) reciprocal determinism helps in understanding the ways in which

the environment affects the individual. This helps to shed light on the impact of the UWI's campus environment on faculty's attitudes, behaviors or efficacy in blended course design. Bandura's approach in conjunction with the work of Minnaar (2012) help in understanding the POP by shedding light on the factors (such as the environment) that may influence faculty's behavior, cognition and learning.

## 1.4 Conceptual Framework

### 1.4.1 Ecological Systems Theory (EST)

The EST provides a conceptual framework through which the POP may be further understood. Originally developed by Urie Bronfenbrenner (1979), it focuses on the impact of the environment on an individual's development. Similar to the theoretical perspectives of Constructivism and Social Cognitivism, EST posits that an individual is strongly influenced by the factors that comprise his/her surrounding environment. Bronfenbrenner's (1979) theory states that a person's environment can be classified into five levels. The microsystem is the level with which the individual has the most direct contact. As such, it is the closest and most influential level to the individual, where he/she impacts or is impacted by persons whom he or she encounters such as other faculty or stakeholders in the context of the POP. One of the central tenets of EST is that no one phenomenon occurs within a vacuum. Rather, each one particularly within education, is influenced by other factors or variables.

While Bronfenbrenner's (1979) original theory focuses more on the settings in which interaction takes place, Neal and Neal (2013) present a much more meaningful emphasis within EST by focusing on the quality of interaction that occurs within any particular setting. This is significantly applicable to this research which investigates

faculty's use of technology through instructional design (ID) in a blended environment (blended course design).

But perhaps the most precise metaphor through which the EST can be applied to the present context is from Zhao and Frank (2003). These researchers liken the preoccupation of environmentalists, scientists and policy makers with animals and the environment, to the preoccupation of educational researchers, practitioners and policy makers with the improvement of the education system. More specifically, Zhao and Frank (2003) point to the many efforts to incorporate technology into school institutions in order to improve the education system, and the minimal progress that such efforts have accomplished. It is this phenomenon that has prompted these researchers to make the assertion that "despite the generous investment in, and increased presence of, computers in schools, computers have been found to be unused or underused in most schools" (Zhao & Frank, 2003, p. 2).

Indeed, technology in the 21st century has expanded beyond computers and currently include mobile applications and devices. Some of the technologies that have been provided by the campus's senior management include an online LMS, Smart Boards, lecture capture software, and some hardware to facilitate the use of these applications for blended instruction. The provision of these technologies does not seem to have translated to the increase in, or adoption of, blended learning on the campus. It is for this reason that the EST and the work done by Zhao and Frank (2003), and more recent work by Hartnett, Kearney and Mentis (2015), can be applied in this research. Through the "ecosystem metaphor" (Zhao & Frank 2003), several factors (organizational,

cognitive, psychological, technological) are highlighted which may possibly account for the lack of meaningful technology integration and blended course designs.

The factors hindering the integration of technology in educational institutions may be numerous, but Zhao and Frank (2003) expound on several ways in which they can be identified. Interestingly, these broad factors may be evident in the organization's resistance to change particularly against new technologies and processes (such as blended instruction). The resistance to change occurs because of the pressure put on the existing practices in the organization (Hartnett et al, 2015, Cohen, 1987; Cuban, 1986), such as the current methods of instruction. The previously mentioned broad factors may also be evident in the insufficient infrastructure (classroom space, limited hardware, and limited access to various resources) in the organization. These may be evident in this research, and as such may underlie the problem with faculty's blended course designs at the UWI.

There may be other factors that exist beyond organizational, infrastructural and technological ones. Collins (1996) posits "the structure and conception of school that evolved in the last century is quite incompatible with effective use of new technologies" (p. 61); and in so doing he acknowledges the limited and limiting structures concerning the use of technology in educational organizations. Means (1994) and Bryan and Volchenkova (2016) reiterate this dilemma recognizing the limitations placed on technologies by poor school structures including buildings, curricula, teaching resources and practices. But referring to organizational practices, Collins (1996) also postulates that "the view of teaching as transmission of information from teachers to their students has little place for students using new technologies to accomplish meaningful tasks (p. 61). He acknowledges the scope of the problem regarding technology integration as multi-

dimensional, and makes clear the need for a paradigm shift in traditional practices (for example in technology integration and instructional practices) for blended learning to be successful.

The EST (Hartnet et al, 2015; Zhao & Frank, 2003) also includes the psychological or perceptual factors that may impact the use of technology in schools. In addition to the fluid nature of technology, there are substantial variations regarding the value of educational technologies and the ways in which they should be used. Compounded with these concerns is the unexpected technical difficulties educators may often encounter, making technology sometimes unreliable (Bryan & Volchenkova, 2016; Collins, 1999).

According to Zhao and Frank (2003), the premise of the EST metaphor is that the integration of technology in educational institutions is similar to the ecological system. To this end, they put forward "metaphorical equivalents" (Zhao & Frank, 2003, p.10) between the emerging issues regarding technology use in schools and phenomena in the ecological system. The first of these is that schools and classrooms function as ecosystems. The school and classroom refer to the settings or "particular local environment" (Nardi & O'Day, 1999, p. 49) where people (as well as their practices and values, or culture) interact with various technologies. It is the teaching environment where biotic components (faculty, students and administrators) and abiotic components (the curricula, the physical settings and location of resources on the UWI campus) work together to facilitate blended course designs.

The second metaphorical equivalent put forward by Zhao and Frank (2003) and Hartnet et al (2015) is that computer uses may be seen as an invasive species. Within the

context of this POP, computer uses can be expanded to refer to all technologies (hardware and software – both digital and otherwise). Similar to living animal species, technologies are constantly evolving. As previously mentioned, they are fluid or dynamic. The impetus for this evolution of diverse technologies according to these researchers, is the expansive human needs, experiences and skills. Only the most efficiently evolved technologies/species can survive and, in some cases produce new variations (Bryan & Volchenkova, 2016; Basalla, 1998; Levinson, 1997). Those that fail to evolve become obsolete and perish.

Teachers, as members of a keystone species, comprise the third metaphorical equivalent. Keystone species are the most important, though not the most dominant, species in the ecosystem (Bryan & Volchenkova, 2016; Odum, 1997). Similar to the selfish nature of biological organisms and genes, teachers can also be seen as selfish when it comes to securing the well-being of their classrooms (Lortie, 1979). However, they may collaborate with others in their species (other teachers) for a particular goal that may also benefit the continued existence or functioning of the school organization. This collaboration, or "reciprocal altruism" (Dawkins, 1989; Wright, 1994; Bryan & Volchenkova, 2016), can be likened to that of animal species helping each other to ensure the perpetuation of the gene line. According to Frank (2002), teachers may co-operate with each other because they all have a common interest in helping their students. In this research it is possible that faculty may have a common aversion to blended instruction for various reasons or perceptions. If this is the case, then these perceptions and attitudes toward blended course designs may be a possible underlying factor.

The fourth metaphorical bridge or equivalent concerns external educational innovations as invasions of exotic species. The introduction of new and/or invasive species, such as technologies, can disrupt the equilibrium that is characteristic of natural ecosystems. Invading species interact with existing species and depending on the qualities of both, there may be several results. The existing species may perish, both species may cohabitate in the ecosystem, the invasive species may perish, or both species may adapt and evolve, developing new qualities for survival. Within education, the most advocated technologies may be regarded as the invading species. The inclusion and/or survival of this invasive species depends on their compatibility with the existing school or teaching environment and the existing species (teachers, students and administrators) that inhabit it. Numerous invasive species (technologies) continue to be added to the UWI each year. In some cases, these invasive species evolve such as the campus's online LMS. In other cases, the invasive species fails to evolve and its use by faculty soon diminishes. One example of this is the lecture capture software initially purchased by the campus' management.

This teaching environment is "nested" (Zhao & Frank, 2003, p.17) in, and/or "networked" (Neal & Neal, 2013, p. 723) with other ecological hierarchies such as government bodies. In such a configuration, the teaching ecosystem does not exist in a vacuum, but according to Neal and Neal (2013) "systems at different levels [such as governmental and societal institutions] relate to one another" (p. 723). An example of this is presented where "states and federal government can support hardware and connectivity, as well as provide small amounts of training [to educators and other school personnel]" (Zhao and Frank, 2003, p. 17), and thereby advocate the use of technology in

the teaching ecosystem. In this research the teaching environment may be influenced by other agents external to this campus, such as the management of all of the UWI's campuses, the government, and also the labor market or other stakeholders, all advocating the use of technology in the teaching and learning process at the institution.

The EST provides a micro-scale and macro-scale of all the factors that can affect blended course designs. The EST approach pays "attention to both parts and wholes, both the actors in an environment and their dynamic interactions with each other as well as the environment, and both living and non-living things" (Zhao & Frank, 2003, p.8). For this reason, the EST is an all-encompassing conceptual framework that is inclusive of the many potential underlying causes and possible stakeholders in this research. It may help in further understanding the POP.

### 1.4.2 Technological Pedagogical Content Knowledge (TPACK)

TPACK is a framework for the understanding of technology integration for teaching and learning (Koehler & Mishra, 2012). It builds on the work of Shulman, who introduced the pedagogical content knowledge (PCK) model. Kohler and Mishra (2012) add technology knowledge to this construct as development of this component is paramount to effective teaching and learning in the 21$^{st}$ century.

More than just expounding on the different kinds of knowledge that an educator should have (such as technological knowledge or pedagogical knowledge), the TPACK model emphasizes the inter-relations or over laps among each kind of knowledge. Wetzel (2012) acknowledges the connections between each component of the model, and proposes Technological Pedagogical Knowledge (TPK), Pedagogical Content Knowledge (PCK) and Technology Content Knowledge (TCK). A combination of these three kinds

of knowledge produces TPACK – the effective integration of technology for teaching and learning. Koehler and Mishra (2012) posit that every component of the TPACK framework is important.

Within this framework, Content Knowledge (CK) refers to the educator's knowledge and expertise in the field or subject matter to be taught to students. For example, a Biology teacher must have some knowledge of Biology in order to teach about the subject or field. In this research the landscape of CK is vast as the campus comprises faculty who specialize in the fields of Social Sciences, Engineering, the Arts, Law, Medicine, Natural Sciences and more. According to Schulman (1986), CK encompasses knowledge of concepts, facts, procedures, theoretical perspectives, and formulae within a specific field. CK influences what is included in the curriculum and courses delivered to students. A deficiency in CK by faculty can have adverse implications for their students (Ball & McDiarmid, 1990). With regard to this POP however, CK may not primarily contribute to the problem as assessment of faculty's CK is done by stakeholders such as the university's Human Resource Department. Nevertheless, it still plays a significant role as it may influence other aspects of the model such as the use of technology tools to teach specific kinds of content.

Another component on the outskirts of the TPACK model is Pedagogical Knowledge (PK). PK refers to an educator's substantial knowledge regarding the teaching and learning process and/or experience. PK therefore encompasses knowledge of theories and practices on teaching methods, student learning, classroom management, educational assessment and the component of a lesson plan. According to Koehler and Mishra (2012), an educator possessing PK should be cognizant of "how students

construct knowledge and acquire skills and how they develop habits of mind and positive dispositions toward learning" (p. 64). As such, it comprises an understanding of cognitive, behavioral and social learning theories and their application in teaching sessions. With regard to the POP, all faculty may be skilled at their areas of expertise (CK) but may not have any deep PK. If this is so, it can be one possible underlying factor of the problem being researched (Koehler & Mishra, 2012).

In the TPACK model where CK and PK overlap, Pedagogical Content Knowledge (PCK) is formed. This is the knowledge of pedagogy that is applicable and transformed or adapted to teach specific content (Shulman, 1986). The educator uses pedagogical principles to present the content in a way that facilitates the students' learning. Hinged on this may be Tomlinson's (2014) differentiated classroom which identifies the diverse learners among different people and the teaching strategies (PK and PCK) that can be adjusted to facilitate the learning process. However, if PK is indeed insufficient amongst faculty in this research, then the use of pedagogical practices to inform the teaching of content (PCK) will be compromised.

Like technology itself, Technology Knowledge (TK) is dynamic and is "always in a state of flux" (Koehler & Mishra, 2012, p. 64). This makes technology and by extension, TK, difficult to define. It may be regarded as the ability to use technology daily and productively, to recognize the use of technology to enhance or impede the accomplishment of any goal, and to adapt to any technology change that has taken place (Koehler & Mishra, 2012). TK, according to them goes beyond traditional computer literacy, and is ever evolving. There may be some faculty members in the POP who may be fairly familiar with technology and as such may have some kind of TK. But a lack of

TK may be correlated with others' unfamiliarity with it. In the latter case, the use of technology to teach will be substantially compromised according to the TPACK model.

Technology Content Knowledge (TCK) however, refers to "an understanding [of] the impact of technology on the practices and knowledge of a given discipline [and] is critical to developing appropriate technological tools for educational purposes" (Koehler and Mishra, 2012, p. 65). TCK includes an awareness that technology and content can influence, and in some cases, hinder each other. While technologies can limit the content to be taught, the content can also limit the kind of technology that can be used. TCK is therefore an understanding that content and technology are inter-related. Within the context of the POP, there may be faculty who are tech-knowledgeable, displaying evidence of it in their use of technologies for daily, personal use – such as using a SMART phone. Many of these faculty may lack TCK and therefore choose technology tools arbitrarily to teach their course content, without considering if the selected tool can hinder or enhance the content to be taught. Through the TPACK model Koehler and Mishra (2012) expound on the importance of TCK and the need for educators to "understand which specific technologies are best suited for addressing subject-matter learning in their domains and how the content dictates…the technology – or vice versa" (p.65). This model highlights the likelihood that the arbitrary use of technology tools by faculty could be a result of limited TCK.

Moreover, knowledge of educational principles that guide the use of technology is also necessary. To this end, there is another inter-relational component of TPACK called Technological Pedagogical Knowledge (TPK). TPK is an overlap between TK and PK that results in "an understanding of how teaching and learning can change when

particular technologies are used in particular ways" (Koehler & Mishra, 2012, p. 65). This dimension of the TPACK framework encompasses the use of sound pedagogical philosophies, teaching and instructional design strategies with regard to the integration of technology in education. Koehler and Mishra (2012) note that this is particularly important because not all frequently used technology tools are designed for the purposes of teaching and learning. Indeed, most frequently used programs have been designed for "business environments…for purposes of entertainment, communication and social networking" (Koehler & Mishra, 2012, p. 66).

TPK encourages educators to critically assess technologies for use in educational contexts such as blended course designs, and refrain from "functional fixedness [or a] mental block against using an object in a new way…to solve a problem" (Duncker, 1945, p. 270). Educators will need to be innovative "forward-looking, creative, and open-minded" (Koehler & Mishra, 2012, p. 66) in finding new ways to use technologies for educational purposes. With regard to the POP, many faculty may be forward-thinking and fluent in the use of technologies, but it may also be possible that others may lack TPK. For example, the majority of faculty on the campus are hired for their expertise in their field or specialization but not for their expertise or training in teaching and learning (pedagogy) or blended course design. This being the case, then it may be an underlying cause of the problem regarding the arbitrary use of technology in their possibly compromised instructional practices and blended course designs.

TPACK is the complete, all-encompassing framework that goes beyond all three core areas of content, pedagogy and technology (Koehler & Mishra, 2012). Its strength lies in the dynamic interaction among these three core areas, which provides the premise

for a more holistic, meaningful and effective approach to teaching with technology (Bruce, 1997; Dewey & Bentley, 1949; Rosenblatt, 1978). Individually, these core areas are insufficient for successful blended course designs, and considering them solely in isolation "represents a real disservice to good teaching" (Koehler & Mishra, 2012, p. 66). These components work best together in a balanced, yet dynamic and transactional relationship. TPACK illustrates that there are several correlational components or dimensions to teaching with technology. In the research, however, it also reveals several possible underlying causes of the problem. Through the TPACK framework, it becomes apparent that the problem may be caused by a lapse in one or more of the core components and transactional spheres in the framework. A possible example of this may include the strong CK but insufficient TPK or TPACK that may exist among the faculty.

The EST and TPACK are two conceptual frameworks that may inform a better understanding of the POP. While EST assists in understanding the POP through an array of external variables such as the teaching or classroom environment, new technologies and the individuals that have to interact or make use of these, TPACK aids in understanding it by focusing on faculty's knowledge and skillset with regard to blended course design.

## 1.5 Underlying Factors

In conjunction with Social Constructivism and Social Cognitive theories, EST and TPACK effectively highlight several possible underlying factors of the POP. These may include resources and infrastructure, and faculty attitudes and perceptions. They can perhaps be classified as (i) institutional factors (infrastructure, resources, policies and

incentives) and (ii) instructor-level factors (faculty attitudes or perceptions, expertise and training).

## 1.6 Institutional Factors

### 1.6.1 Resources

There are many barriers and other underlying factors that contribute to the arbitrary way in which blended courses are designed at the UWI. One of them is a lack of resources. As alluded to in the EST and TPACK frameworks, resources may include both people such as faculty, as well as materials such as technology tools. Betrus (2013) defines resources as encompassing "the tools, materials, devices, settings, and people that learners interact with to facilitate learning and improve performance" (p. 213). However, the use of resources may not only refer to students' use of these resources. According to Betrus (2013), the outcomes are much greater when the use of resources is mutual between students and teachers. Students' use of resources can often be predicated on the faculty's blended course designs.

Research by Oblinger (2005) for example, has shown the natural inclination that most students tend to have toward technology tools, but the faculty should also be on par with the students as far as this is concerned. Brown (2005) suggests that resources can be divided into technical (computer hardware and software), human (training, administrative and support personnel), and financial (funding, incentives) resources. Brown (2005) conducted a study that illustrated that many instructors avoided the use of technology tools in their teaching practices due to a lack of knowledge and training and/or familiarity with such tools A lack of human resources can be seen as a possible underlying causal factor within the context of this POP.

Technical, financial and human resources are essential to successful blended course designs and the integration of technology in 21st century education (Oh & Park, 2009; Brown, 2005; Donaldson & Knupfer, 2001). If these are missing or minimal, they can become a causal factor to the POP, as they hinder the faculty's systematic blended course designs. Resources can be classified broadly as an institutional causal factor associated with the POP.

## 1.7 Instructor-Level Factors

Regarding the POP, this classification of underlying causal factors refers to faculty-related issues. In keeping with the EST (Neal & Neal, 2013; Zhao & Frank, 2013) and TPACK (Koehler & Mishra, 2012) frameworks, it includes issues such as faculty's knowledge and perceptions or attitudes towards blended course designs.

### 1.7.1 Faculty Perceptions

Faculty perceptions, experiences and attitudes toward blended course design refer to "…an evaluative disposition toward some object based upon cognitions, affective reactions, and behavioral intentions…composed of three dimensions: the cognitive (beliefs), the affective (feelings), and readiness or intent to act." (Kopcha, 2012, p. 3). This implies that barriers to blended instruction and course design, should first be addressed individually and internally – perhaps in conjunction with addressing more major or institutional factors. According to Lin and Shao (2000), "success in the e-learning system primarily depends on the user's attitude, participation and satisfaction" (p. 285). Therefore, faculty perceptions or attitudes can have a substantial impact on the use and success of blended learning in any institution; so much so that without addressing this issue, initiatives toward blended learning and course design may prove ineffective.

Should faculty perception exist in this research, then it may be another underlying or causal factor to the problem.

## 1.8 Conclusion

Theoretical perspectives such as Social Constructivism and Social Cognitivism, and the use of conceptual frameworks such as EST and TPACK, highlight several possible underlying causes of the POP. These factors include, but are not limited to faculty perceptions, resources, management and infrastructure. Further examination (specifically through EST and TPACK) has revealed that these can be classified into institutional and instructor-level factors. The theoretical perspectives and conceptual frameworks contribute to a more thorough and insightful understanding of the problem. This problem and its underlying factors can be further verified and analyzed through a needs assessment to determine an appropriate intervention.

# 2 Chapter Two: The Needs Assessment

## 2.1 Introduction

The Problem of Practice (POP) is the lack of a systematic approach in faculty's use of technology in blended course designs. While there may be an array of underlying factors related to this problem, this investigation is guided by several goals and objectives as well as a needs assessment or preliminary research which provides further insight to the problem.

## 2.2 Goals and Objectives

The investigation regarding this POP is guided by very specific questions which are as follows:

**Research Questions:**

1. Is there a difference in the approach to teaching with technology between faculty who have completed the Certificate in University Teaching and Learning (CUTL) program and those who have not completed the program?
2. What technology and/or training initiative has most impacted faculty's approach to teaching and learning?
3. How successful have training initiatives been in changing faculty behavior regarding blended learning modes of delivery?
4. What aspect of the training initiative has been most effective in changing teachers' attitudes toward technology enhanced learning?
5. How can faculty development initiatives be improved to further ensure that faculty use a systematic approach to teaching with technology?

The purpose of the needs assessment was to illuminate and allow for a more accurate diagnosis of the POP. It functioned as preliminary research where data was gathered on the POP and its underlying causes, prevalence (scope), conditions, shortcomings in the institution's workflow or systems, service gaps, and perhaps any additional concerns or subsidiary problems that may not have been considered previously. More specifically, the needs assessment was designed to reveal faculty's awareness and opinions regarding the senior management's blended learning initiative on the campus. It was also designed to shed light on the faculty's views and experiences in instructional design, teaching with technology and the faculty training initiatives for blended course design. Additionally, it provided insight to the faculty's needs as it pertained to their preparation and practice in the use of instructional design principles and technology to teach in a blended environment.

The needs assessment was instrumental to a more accurate understanding of the problem. The data that was gathered was analyzed to shed light on the nature of the problem. This was necessary before the POP can be effectively treated and mitigated.

## 2.3 Methodology

### 2.3.1 Participants

The respondents recruited as participants in this research were based on random classified samples of the campus's full-time teaching staff/faculty. Out of an average population of 500 full time teaching staff, seventy members, from amongst the campus's seven different faculties, were selected. They were randomly contacted through an email notifying them of the research. Once they indicated interest, further details were given and an invitation was also sent for subsequent participation. They were easily accessible

via the database at the campus's Center for Excellence in Teaching and Learning (CETL) and online directory which had their names, email addresses and office contact numbers. Different populations were used to obtain different types of data. Samples of the teaching population were used for interviews, while another sample of the population was used for observations. There were no special considerations to be addressed in recruiting the target population besides scheduling conflicts (for observations) where necessary.

### 2.3.2 Measures

Several variables played a significant role in this preliminary study. The primary dependent variables included the faculty's attitude to teaching with technology and their use of technology tools in a systematic way. The independent variables included technologies that were used and/or were available for blended course designs. The availability of technologies was one independent variable in this investigation because it was a factor that was not directly influenced by any other variable or phenomenon. It remained a fixed variable. Faculty had access to a number of different technologies that were constantly upgraded with additional features and displays. Technology, by its very nature, was therefore seen as fluid or dynamic (Postman, 1998). But along with these upgrades, there was a wide range of avenues through which textual, graphical or video documentation could have been accessed, such as *YouTube*, *Khan Academy* or *Showmedo*. With the availability of these, it should have made it generally easier for faculty to use or stay updated with these advancements. Nevertheless, the availability of these technologies was a constant and fixed (or independent) variable as it was not altered by other factors. However, the availability of these technologies may have influenced other factors.

Another independent variable was training in blended instruction. To further support the implementation of the campus' blended learning policy, its senior management team provided several support structures for faculty using technology to teach. One of the primary bodies responsible for this was the campus's CETL, which had been mandated to develop faculty's efficacy in teaching and learning. To this end, the CETL provided a myriad of training initiatives such as workshops, consultations, and certified graduate programs that were aimed at equipping faculty with knowledge and skills in instructional design, blended learning and technology tools in education. In this research, faculty training remained an independent variable since it was constantly available to staff throughout the year, and was not largely influenced by other factors.

However, faculty's attitude and use of technology in a systematic way remained the primary focus of this research. Faculty perceptions, experiences and/or attitudes toward teaching with technology refers to "…an evaluative disposition toward some object based upon cognitions, affective reactions, and behavioral intentions…composed of three dimensions: the cognitive (beliefs), the affective (feelings), and readiness or intent to act." (T. J. Kopcha, 2012, p. 3). Faculty's attitude encompasses their disposition and perceptions regarding the integration of 21st century technologies in their course designs, and in this research it was a dependent variable. According to Lin and Shao (2000), "success in the e-learning system primarily depends on the user's attitude, participation and satisfaction" (p. 285) and therefore, faculty perception and/or attitudes may have had a substantial impact on the use and success of technology for blended learning. According to Thurab-Nkhosi, (2018), for example, evidence of faculty attitudes was likely to be reflected in their attendance at the training initiatives offered by the

UWI's CETL. It was integral that faculty's attitudes toward blended course designs comprise a major part (one dependent variable) of this research.

The second and perhaps more prominent dependent variable regarding this POP, was the way in which faculty used these technologies. The use of technology in their teaching practices could be arbitrary, systematic, or perhaps a blend of these two. This was the phenomenon that was more closely investigated. Garrison (2017), Pang (2008) and Hooper and Rieber (1995) all agree that "effective technology-based teaching is more likely the result of teachers' abilities to design lessons based upon robust instructional principles than of the technology per se" (Hooper & Rieber, 1995, p.161). They illustrated the need to bridge the gap between theory and practice regarding instructional design and technology integration. It was important that faculty's quality of technology-use was investigated as this may have impacted students' interaction and learning with the technology, and by extension, it may have also affected the success of blended learning on the UWI's campus.

The faculty's attitude and use of technology tools were seen as dependent variables primarily because they were likely to be influenced by or dependent on the aforementioned independent variables (the available technology and training initiatives) in this research.

### 2.3.3 Data Collection Methods

In conjunction with participant observation, electronic surveys were also used to gather data on the problem. A mixed methods approach was used in this regard, as the participant observation provided qualitative data and the online survey, which comprised closed and open-ended questions, provided both qualitative and quantitative data.

The participant observation was conducted in the first two face-to-face class sessions in a course entitled 'Advancing Teaching with Technology'. This blended course was part of a graduate program (Certificate in University Teaching and Learning (CUTL)) in which faculty at the university were enrolled. Both sessions occurred on the campus on different days within the first month of the second semester (February). Additionally, both sessions largely comprised the same participants or subjects and course facilitator. On both occasions, the participant observation was covert as participants were unaware that they were being observed by the researcher. This minimized the occurrence of the Hawthorne or observer effect (Bornman, 2012) and produced more representative and valid qualitative data to be obtained. Following the second observation session, the participants were sensitized about the research and observation process, thus adhering to ethical protocols.

While the course facilitator conducted the sessions which comprised group activities, presentations and discussions, the observer/researcher paid close attention to the subjects' behaviors, conversations, and their written or spoken responses to questions posed by the facilitator. Data from these sessions comprised field notes, pictures and diagrams such as concept maps and tables (Appendix B).

To build on the aforementioned, a random survey was done on faculty across the campus. This online survey was designed using *Qualtrix* and comprised thirty-five open-ended and closed-ended questions. Using the campus's emailing network, the survey was sent to faculty who were randomly selected from the CETL's database of participants in various faculty training and development initiatives such as technology training workshops, one-on-one consultations, and previous cohorts of the CUTL program. While

the participant observation was conducted at the beginning of the semester, the survey was sent out to faculty near the end of that semester.

The initial response rate of faculty to the survey was substantially slow and low with responses from approximately 5-7 faculty, and based on feedback from the faculty, this may have been caused by the time at which the survey was sent – at the end of the semester during which faculty were heavily engrossed in securing and marking final examination scripts, uploading grades onto the online system and preparing for semester three (3) which immediately followed semester two (2) examinations. The slow response to the survey may have also been caused by the substantial changes that were being made to the campus's senior management and across several departments, such as the retirement of the campus's principal and the official media announcement of his successor.

To alleviate the problem of slow survey responses, reminders were sent via electronic mails. The sample was expanded as the survey was sent via electronic mail to additional faculty. For example, the survey sample was expanded to include previous cohorts of the CUTL program, including the 2012, 2013 and 2014 cohorts which were added to the 2015 cohort that was initially used. The number of responses to the survey increased to twenty-five.

To ensure confidentiality, the survey and the responses received remained anonymous. Participants were not asked to identify their names or UWI Staff Identification Numbers and electronic mailing addresses, nor were asked to identify the courses they taught or continued to teach. The survey targeted their cognizance of the campus's blended learning policy and their views and/or expertise on some of the

training available on the campus, such as the CETL's workshops. Respondents thereafter returned their signed copies of the consent forms via electronic mail or by hand according to their convenience.

## 2.4 Initial Summary of Results

The results obtained revealed several possible causes of the problem. While the random sample included more female than male faculty from all departments and specializations across the campus such as Medical Sciences, Engineering, Social Sciences, Humanities and Education, the sample comprised faculty between the ages of 22 to 61 years and over, thereby making the survey sample representative of the wide demographic of faculty in the whole campus community. Nevertheless, most responses came from faculty between the ages of 31-40 years and 51 to 60 years, as seen in Table 2.1.

Table 2.1

*The age distribution of respondents in the survey*

| **Number** | **Answer** | **Responses** | **Percentage** |
|---|---|---|---|
| 1 | 22-30 | 1 | 4% |
| 2 | 31-40 | 13 | 52% |
| 3 | 41-50 | 3 | 12% |
| 4 | 51-60 | 7 | 28% |
| 5 | 61 and over | 1 | 4% |
| **Statistic** | | **Value** | |
| Min Value | | 1 | |
| Max Value | | 5 | |
| Total Responses | | 25 | |

This was intriguing since, based on informal conversations with other various faculty, administrators and support specialists, the prevalent assumption on the campus was that senior faculty were more resistant to teaching with technology. In the participant

observations, the subjects were from a wide variation of ages and were from different disciplines and departments across the campus.

While the majority of the sample (19 of the 26 respondents) used for the survey and the observations have been employed at the University of the West Indies from 1 to 10 years, approximately 74% of the survey respondents were not fully aware of the campus's blended learning policy, as seen in Table 2.2. This was significant since such a phenomenon was also apparent in the observations which occurred a few months prior, where faculty also indicated a significant lack of awareness regarding the campus's policy for blended learning and the details of it. Furthermore, both the survey and participant observations revealed that faculty generally had a very basic understanding of blended learning, which they often identified as a combination of face-to-face sessions and instructions with online activities. In other cases, some faculty identified it as something the university was trying to implement – but their knowledge of the campus's blended learning policy was limited.

*Table 2.2*

*Faculty's awareness of the campus's blended learning policy.*

| **Response Number** | **Answer** | **Response** | **Percentage** |
|---|---|---|---|
| 1 | Yes | 9 | 36% |
| 2 | No | 3 | 12% |
| 3 | Somewhat | 13 | 52% |
| | Total | 25 | 100% |
| **Statistic** | | **Value** | |
| Min Value | | 1 | |
| Max Value | | 3 | |
| Mean | | 2.16 | |
| Variance | | 0.89 | |
| Standard Deviation | | 0.94 | |
| Total Responses | | 25 | |

Despite not being fully cognizant of the policy and its details, the faculty used in the survey generally agreed that the vision for blended learning on the campus was practical; only a few respondents found this vision to be impractical or a failure. Faculty in the observations (some of whom were also included in the survey) unanimously indicated that such a vision was hindered by a lack of resources, poor systems, management and infrastructure across the campus. Nevertheless, they generally advocated the use of technology to teach, and also expounded on some of the reasons for this – by highlighting the benefits of teaching with technology. One can therefore infer that once the issues regarding a lack of resources, poor systems, management and infrastructure were resolved, faculty would more likely be fully engaged in blended course designs or may at least see the senior management's vision as practical.

Faculty in the survey and observations generally indicated that they had already made attempts to teach their courses using technology. They identified content-sharing platforms such as *Microsoft PowerPoint*, *Google Drive* and *YouTube* videos, social networks such as *Facebook*, and blogs, mobile applications such as *Whatsapp*, and the campus's online LMS (myeLearning, the campus's branded version of the Moodle platform) through which they administered quizzes and uploaded content for their students. Respondents also expounded on some of the ways they used the aforementioned technology tools to facilitate class discussions, course assessments and video simulations. Many respondents acknowledged learning these through technology workshops by the CETL. This further illustrated faculty's willingness to use blended course designs. It also highlighted the need to resolve the aforementioned hindrances. Based on the data collected, faculty indicated a willingness and had taken certain initiatives to teach with

technology, but were often discouraged from doing so when they encountered difficulties stemming from poor infrastructure and management and a lack of resources. The lack of resources included a lack of training and support personnel.

While some faculty might have used technology to teach, many seemed to have done so without any systematic approach or preparation (Table 2.3). As seen in Table 2.3, most of the respondents in the survey stated that they did not have a preparation process for teaching with technology. There may have been a lack of definitive instructional design principles guiding faculty's use of technology to teach their courses.

*Table 2.3.*

*The number of faculty with a preparation/systematic process for teaching with technology*

| **Response Number** | **Answer** | **Response** | **Percentage** |
|---|---|---|---|
| 1 | Yes | 12 | 55% |
| 2 | No | 2 | 9% |
| 3 | Somewhat | 8 | 36% |
| | Total | 22 | 100% |
| **Statistic** | | **Value** | |
| Min Value | | 1 | |
| Max Value | | 3 | |
| Mean | | 1.82 | |
| Variance | | 0.92 | |
| Standard Deviation | | 0.96 | |
| Total Responses | | 22 | |

But despite respondents' lack of instructional design principles to guide their integration of technology to their teaching preparation and practice, faculty generally found that instructional design principles were effective. They referred to the positive feedback they received from students regarding the delivery of the course as well as their estimation of increased communication and participation in the course by students. However, none of

the faculty reported that their use of technology improved students' learning and performance in their courses. In the participant observations a class discussion ensued on a similar concern and faculty agreed that despite incorporating technology in their courses, there was little improvement in students' performance. If this were indeed true, the lack of improvement in students' performance could possibly be explained by the absence of instructional design principles in guiding the faculty's blended course designs (Sayed & Baker, 2014).

Further confirming this possibility was faculty's response in the observations that they often found technology to be a distraction. They stated that while their intention for incorporating technology was to enhance the teaching and learning process and students' performance, it often distracted or amused students instead of contributing to their learning. They blamed this on the occasions where students often digressed during online discussions, or focused on using the technology as opposed to using it for learning. While there might be several reasons (such as the technology tool used) for this phenomenon, it is possible that applying instructional design principles via a more systematic approach to integrating technology into their courses could avert or at least diminish such an occurrence.

To address these issues, the campus's senior management mandated several departments, most notably the CETL, to train faculty and improve their teaching and learning skillset. As seen in Table2.4 below, the fact that most faculty in the survey stated that they had never received training from other institutions (apart from the UWI) regarding teaching and learning with technology, illustrated the necessity for training initiatives such as workshops and certified programs.

*Table 2.4. Number of faculty receiving external training in teaching with technology.*

| Response Number | Answer | Response | Percentage |
|---|---|---|---|
| 1 | Yes | 7 | 32% |
| 2 | No | 11 | 50% |
| 3 | Somewhat | 4 | 18% |
| | Total | 22 | 100% |
| **Statistic** | | **Value** | |
| Min Value | | 1 | |
| Max Value | | 3 | |
| Mean | | 1.86 | |
| Variance | | 0.50 | |
| Standard Deviation | | 0.71 | |
| Total Responses | | 22 | |

While most faculty were aware of these training initiatives, and could attest to their improved knowledge and competencies in blended instruction, there still appeared to be a dichotomy between their incorporation of technology tools in their courses and the effectiveness of this use as evidenced in what the sample saw as a lack of improvement in students' overall performance. This could also be an area for further investigation.

Faculty in the survey were invited to assess the training initiatives on the campus thus far, particularly those initiatives implemented by the campus's CETL. This part of the survey functioned as an impact assessment of the major faculty training initiatives on the campus to date. With regard to training workshops, faculty seemed to like the small-scaled approaches as opposed to larger conference-styled workshops because they felt more comfortable to ask questions and obtain more individual attention for their specific needs. However, some faculty admitted that while they enjoyed and learnt a great deal from the workshops, they had not incorporated the principles, tools and knowledge from the workshops to their actual blended course designs. This may have been due to several factors such as faculty's lack of time, follow-up training, or incentives. To improve the

workshops, many others suggested incorporating experienced faculty to teach parts of these workshops, and implementing follow-up (post-workshop) initiatives to ensure that faculty apply all that they had learnt in the workshops.

The CUTL program, was another major initiative by the campus's CETL to develop the faculty's skillset in teaching and learning. Similar to the workshops, most faculty found this program to be helpful, and highlighted several strengths of the program such as the facilitators, the content and activities, and networking with other faculty. However, faculty felt that this program or initiative could be improved by extending the duration of the program to over one year, adjusting the scheduling of assignments in the program, and that faculty be relieved of some of their teaching responsibilities during the program by being assigned a teaching assistant for example. These suggestions were made in the survey and strongly reflected the views of faculty in the participant observation. The data obtained on the workshops and CUTL program not only functioned as an impact assessment, but based on the suggestions made by faculty in the survey and observations, could also be used to inform other subsequent initiatives that could more effectively meet the needs of the faculty.

### 2.5 Summary and Classification of Results

The results obtained from the participant observations and online surveys were classified into three categories – (1) training schedule, (2) training content, and (3) infrastructure and management.

**Training schedule** referred to the overall scheduling of training sessions provided on the campus. According to the data, most faculty encountered scheduling conflicts as technology training workshops, for example, often occurred at the same times as major

meetings within their department. In the open-ended survey questions, faculty suggested changing the times at which such workshops, for example, were scheduled, and thereby make it more convenient for them to attend without being absent from their other meetings. Faculty also suggested that such workshops should occur more frequently. This would allow those who missed previous sessions the opportunity to attend the same workshop at a subsequent time. As such, certain workshops may need to be offered repeatedly to allow faculty the opportunity to participate and receive the training they needed and generally seemed to value as seen in the data.

**Training content** referred to the design of the workshops or other training initiatives that were offered on the campus. According to the data in the survey, some faculty suggested a train-the-trainer approach, where faculty who had already completed the CUTL program for example, would be used to assist in facilitating workshops. Additionally, faculty suggested the activities and materials used in the training initiatives (workshops, CUTL and MHED for example) be more relevant or applicable to their field or specialization as opposed to a generic approach. The findings showed authentic learning was being requested by faculty for the training workshops and certificate programs currently offered.

**Infrastructure** In both the observations and the survey, faculty conveyed their dissatisfaction with the insufficient resources such as limitations on classroom space, computer laboratories, administrators, support staff and services, to facilitate effective blended learning. Additionally, faculty found the management systems and protocols regarding access and use of technologies such as the campus's LMS, as being a hindrance and deterrent to teaching with technology. These concerns and their effects on the

integration of technology in the context of the POP, seemed to echo the tenets of the EST and TPACK frameworks by Zhao and Frank (2003) and Koehler and Mishra (2013).

## 2.6 Conclusion

Many of the findings obtained during the participant observations were also reflected in the data acquired from the survey. Both the survey and observations highlighted several factors and concerns regarding the POP. The faculty's responses indicated that these factors and concerns included a lack of resources, as well as poor management and infrastructure for blended instruction and course design. Additionally, faculty were generally content with some of the training that had been made available to them with regard to blended course design. However, they wanted to be more involved in the process, for example by being asked to assist in the teaching of workshop sessions – much like a train-the-trainer initiative. But perhaps most notably, while faculty were aware of the benefits of blended instruction and learning, and were generally willing to incorporate technology in their course designs, they appeared to be largely unaware of the senior management's policy for blended learning on the campus – despite its policy having been in existence for 7 years. Any subsequent intervention to this POP should therefore address these issues of awareness, not just awareness of the blended learning policy but also awareness and application of instructional design principles in blended learning and course design.

# 3 Chapter Three: Synthesis of literature and Proposed Intervention – A systematic approach to faculty's blended course design

## 3.1 Introduction

The University of the West Indies (UWI) is the largest institution for Higher Education in the Caribbean. The St. Augustine campus has become the largest campus with an estimate of 17,969 students and 500 faculty (The UWI Annual Report, 2016). The campus' senior management implemented a policy for blended learning.(Thurab-Nkhosi, 2013). This policy sought to improve faculty's blended instruction via faculty training initiatives, and thereby improve students' academic performance. This had a marginal impact as the campus' senior management believed that faculty did not fully buy-in to the initiative to teach with technology in a systematic way (Thurab-Nkhosi, 2013; Edwards-Henry et al., 2006). Therefore, the Problem of Practice (POP) is the lack of a systematic approach in faculty's blended course designs.

As mentioned in chapter 2, a needs assessment was conducted to provide insight to the problem. Guided by research questions, participant observations and online surveys were used to obtain data from faculty on the POP. Results from the participant observations and online surveys were classified as (1) training time or schedule, (2) training content, and (3) infrastructure and management. Regarding the training schedule, findings indicated that faculty could not participate in training ventures, as technology training workshops often occurred at the same times as major meetings within their departments. Faculty suggested changing the times and frequency that such workshops were scheduled to more on-going so they can participate.

In the survey findings, faculty felt that the training content and initiatives were not inclusive. In addition to a 'train the trainer' approach, they suggested the activities and materials used in the training should be more applicable to their field or course context for a more authentic learning approach. The data conveyed faculty's dissatisfaction with the insufficient infrastructure and resources such as physical classroom spaces and support for blended learning, which made it a deterrent. These concerns and their effects on technology integration seemed to echo the tenets of the research literature such as the EST (Zhao & Frank, 2003) and the TPACK frameworks (Koehler & Mishra, 2013), which advocated the provision and/or acquisition of specific requirements for effective blended instruction.

Additionally, **w**hile faculty were cognizant of the advantages of blended instruction, and were generally interested in blended course designs, they appeared to be largely unacquainted with the senior management's policy for blended learning on the campus – despite the policy's 9-year existence. This must also be considered and addressed by any subsequent intervention to the POP. However, such an intervention should go beyond policy sensitization and aim for the application of instructional or pedagogical principles in faculty's blended course designs.

### 3.2 Blended learning on the UWI campus

The initiatives for blended learning on the UWI's St. Augustine campus were informed by the aforementioned policy developed by the campus' senior management (Thurab-Nkhosi, 2013; The University of the West Indies, 2012). According to this policy, blended learning was defined as "…the appropriate organization of face to face approaches with web-based and other information and communication technologies for

advancing student-oriented, active, collaborative teaching and learning processes" (The University of the West Indies, 2012, p. 1). Based on this, a highly effective blended environment should have several pertinent traits including a blend of face-to-face and online instruction, active learning, collaboration, student-centeredness and careful planning (The University of the West Indies, 2012, p. 1).

The university's conceptualization is very reminiscent of the definitions put forward by Garrison and Vaughan (2007), and Graham (2006) of blended learning as "the thoughtful fusion of face-to-face and online learning experiences" (Garrison & Vaughan 2007, p. 5) and Yuen (2011) who also concisely described it as a carefully orchestrated combination of elearning and in-class (face-to-face) or direct learning. Even in these definitions a systematic approach was included as a key facet with the recurrent mention of "the appropriate organization" (The UWI, 2012, p. 1) and "the thoughtful fusion…" (Garrison & Vaughan, 2007, p.5). Garrison and Vaughan (2007) suggests that this is important because it ultimately affects the students' learning experience and/or performance.

Niemiec and Otte (2005) further reiterated planning or a systematic approach as a requirement for effective blended learning and course design, stating that a "blended course" was the integration of online with face-to-face instruction in a planned, pedagogically valuable manner; and not just a combination (addition) of online with face-to-face […] time" (2005). These definitions support a systematic approach to technology-use in blended environments. However, the needs assessment indicated that faculty used a more arbitrary approach to blended instruction, and this was further shown in the arbitrary blended course designs on the campus' Learning Management System. The

campus' policy and definition for blended learning such as "the appropriate organization" (The University of the West Indies, 2012, p. 1), had not translated to faculty's blended course designs, and this is the POP which this research aims to mitigate.

Once systematically planned, successful blended course designs provide several research-based practices and advantages. A blended course design allows faculty to more successfully meet the needs of their students, while making the learning environment more flexible and engaging (Oh & Park, 2009). This is in keeping with the campus' conceptualization of blended learning as "student-centered" (The UWI, 2012, p. 1). Hameed, Badii, and Cullen (2008) also investigated the efficiency of blended learning and course design, and they concluded that this approach was one of the most flexible methods to e-learning. In another study Marc (2000) reviewed blended course designs or strategies for delivering instruction in a digital age and found that they more effectively met the students' individual learning needs as opposed to exclusively focusing on the faculty's or institution's needs. In addition to being carefully planned or systematic, a blended course design needed to be student-centered. A student-centered design comprised various activities designed with the student in mind, to develop learner autonomy and independence in learning a specific skill (Jones, 2007). This ensured that the teaching-learning experience was active or highly engaging and potentially more effective (Hameed, Badii, & Cullen 2008; Marc, 2000).

Active learning is also a trait of effective blended course designs. Active learning may be defined as the engagement of learners in "doing things and thinking about the things they are doing" (Bonwell & Eison, 1991). Following an investigation, Chen and Jones (2007) concluded that blended course designs allowed students to acquire a deeper

understanding of content while actively participating in course activities. Additionally, Akkoyunlu and Soylu (2006) found in their investigation that blended course designs facilitated more interaction among students and between students and teachers – something highly recommended by Garrison (2017) as teaching presence and social presence in the Community of Inquiry (COI) framework. Akkoyunlu and Soylu (2006) also found that this level of quality interaction was highly demanded by students in such blended environments.

Rovai and Jordan (2004) explored the interaction amongst students and between students and faculty. This was a causal-comparative research design between fully online, traditional or face-to-face, and blended course designs in higher education learning environments. Their findings illustrated that blended course designs fostered a stronger sense of community among students and their faculty than in traditional or fully online courses. However, active learning should be encouraged and facilitated by the instructor or faculty (Rovai & Jordan, 2004). This may be done via the use of collaborative assignments, project-based learning and instructor-led activities (Van Noord, Gutsche, Hillman, Kellison, & Musselman, 2007; Rossett, Douglis & Frazee, 2003). These incorporate the teaching presence, social presence and cognitive presence in the COI framework for blended course designs (Garrison, 2017).

Despite the many benefits that carefully planned and effective blended course designs provide, the needs assessment showed that faculty at the UWI either facilitated blended learning in an arbitrary manner or did not make any use of the online environment such as the campus' (LMS and other resources). In a 2005 study conducted by Edwards-Henry et al (2006), the campus had a total of 393 blended courses on its

LMS, “for which 136 courses were listed as inactive test courses” (p. 9). More recently, this was further supported by the findings from the needs assessment. The needs assessment revealed that when faculty used the campus LMS, it was primarily for the dissemination of information to students without faculty-led activities. Many other courses in the LMS were empty or inactive despite having students enrolled in them. The online environment is an essential component of any blended course. Along with a systematic course design, it allows for effective blended learning (Vaughan & Garrison, 2005). To this end, interactive activities, instructional strategies and an increase in the faculty’s presence in the online course are necessary via online discussions, short online seminars and synchronous sessions (Laster, Otte, Picciano, & Sorg, 2005; Hofmann, 2003; Martin, 2003).

The literature thus far suggests that if faculty are expected to design and implement blended courses and thereby achieve the benefits of a carefully planned approach to blended learning, they would need to be trained through a professional development initiative (Roisin, 2014).

## 3.3 Synthesis of Literature

The needs assessment highlighted several concerns. Not only did it highlight underlying or causal factors such as faculty perceptions, efficacy, and preparedness, a lack of resources and support structures, but it also revealed that the POP was two-dimensional. The problem existed on an instructor-level as well as an institutional level. At the instructor-level were faculty’s attitudes and efficacy, and at the institutional level was awareness of the policy for blended learning. The intervention must target these to resolve the problem. In conjunction with the findings from the needs assessment, the

conceptualization and implementation of the proposed intervention were informed by four primary theoretical perspectives and frameworks.

While the conceptual frameworks (blended learning, professional development, TPACK and COI) were considered for a possible intervention at the instructor-level, the theoretical perspectives (social constructivism and transformational leadership) were considered for one at the institutional level. Critically analyzing the POP from these two levels helped to inform the proposed intervention designed to address the POP and its major underlying issues.

## 3.4 Theoretical Perspectives: Social Constructivism and Transformational Leadership

A review of the theoretical perspectives on learning and leadership may be necessary before an intervention can be constructed. While the theoretical perspectives on learning, such as constructivism, may inform the content and teaching methods used in the intervention, the theories on leadership such as transactional leadership, may be useful for the implementation and impact of the intervention.

### 3.4.1 Social Constructivism

Social constructivism is a teaching approach that was originally advocated by theorists such as Vygotsky (1982), von Glasersfeld (1989), Jonassen (1994), and Kafai and Resnik (1996). It postulates that the teaching and learning process engages individuals in "creating meaning from experience" (Bednar et al., 1991, p. 6). Within this framework, the teaching and learning process is socially and contextually specific (McKinley, 2015), and thus, human interaction and engagement are tenets of social

constructivism. Considering this, Ertmer and Newby (1993) believe that knowledge stems from one's interpretation of one's experiences and that "humans create meaning as opposed to acquiring it" (p. 62).

Social constructivism can be seen as two-fold, comprising implications for the educator and the learner. For the learner, it requires active participation and engagement in the learning process. Von Glasserfeld (1982), therefore, posits "knowledge is not passively received but actively built up by the cognizing subject" (1982, p. 182). To this end, the learning becomes more meaningful when the learner interacts with fellow peers or colleagues, engages in critical and creative thinking, solves problems, innovates, communicates, interprets, and constructs meaning or knowledge. Learning is, therefore, an active process for the learner (Ernest, 2010). For the teacher, social constructivism requires him/her to create opportunities for the learner, the faculty in this context, to interact with peers and colleagues, think critically and creatively, and construct meaning. It also requires the teacher to break down complex information for the learner to accommodate (von Glasserfeld, 2005; Vygotsky, 1982). Constructivism provides context in which the teacher's role is to facilitate the learning process.

Through social constructivism, the intervention will not only sensitize faculty to the campus' blended learning policy and instructional design principles, but it may also help to improve faculty efficacy in applying these principles to their instructional practices and blended course designs. Other subsidiary theoretical frameworks are needed, namely blended learning and professional development. Blended learning is heavily influenced by the tenets of social constructivism.

### 3.4.2 Transformational Leadership

The theories of transformational leadership may be integral to the implementation, content and design, and faculty participation in an intervention. Transformational leadership seeks to identify any change that is needed, create a vision for a change and then inspire or motivate others (followers) to make this change. This kind of leadership acquires results or change (Tichy & Ulrich, 1984) through strategy and structure (Geib & Swenson, 2013; Murphy & Ensher, 2008). Transformational leadership, therefore, has a neuroscientific dimension to it whereby human emotions play a significant role (Lafferty & Alford, 2010; Waldman, Balthazard & Peterson, 2011). For this reason, it is integral to the change management process.

Transformational leadership may support the implementation of an intervention. Part of transformational leadership is to get buy-in from subordinates by increasing motivation, morale, confidence, satisfaction and feelings of accomplishment both individually and collectively (VanSeters & Field, 1990). Transformational leadership not only boosts motivation but also boosts performance amongst followers, and thereby brings about positive transformations (Geib & Swenson, 2013). Within the context of the POP, the transformational leadership approach may be particularly useful in implementing an intervention by engaging the campus' stakeholders or senior management, seeking their permission and support. This buy-in would require making a proposal to the senior stakeholders of the campus such as the campus' Registrar Principal and ethics committee, explaining the alignment and benefits of the intervention to their strategic plan and policy for blended learning. This aligns with research by Yee (2000) which suggests the significant impact of transformational leadership on the promotion of

technology use in school organizations by engaging senior stakeholders (Yee, 2000 in Mojgan Afshari, Kamariah Abu Bakar, Wong & Saedah Siraj, 2012).

A transformational leadership approach may also inform the content and design of an intervention. In the needs assessment, respondents indicated that they were unaware of the intricate details of the senior management's policy for blended learning. Applying a transformational leadership approach, the content and design of an intervention should orient participants to the senior management's vision, strategic plan and policy for blended learning, and this should be done early in an intervention or program. Sharing this vision is integral so the context and change can be understood by participants, and would more likely to lead to their buy-in (Burns, 2003) to the blended learning policy. This aligns with transformational leadership theories. Through transformational leadership, faculty can feel more included and motivated to implement the policy for blended learning through their blended course designs. Transformational leadership allows "leaders and followers to advance to a higher level of morality and motivation" (Burns, 2003, p. 49). Orienting the participants to the blended learning policy is one way in which they can feel involved and motivated to help implement the policy.

Using this leadership approach is a transition away from the traditional top-down leadership approach, where faculty are expected to do what has already been decided by management (Gregory et al., 2013; Judge, Timothy, & Piccolo, 2004). This has perhaps been the case with the policy for blended learning on the campus, as indicated in the needs assessment, where faculty have been largely unaware of the intricacies of the policy but are expected to adopt a blended mode of course design and delivery. Faculty may be unaware of the policy because it was not communicated to them, and this has

translated into an unclear plan of action (Yukl, 1994) –as seen in the arbitrary blended course designs.

Transformational leadership may address this type of if incorporated into the intervention plan. One of the foundation tenets of transformational leadership is the construction and communication of vision (Bass & Avolio, 1993). The vision is for a blended mode of delivery. Along with this, and within the context of the POP, is the vision for a systematic approach for faculty's blended course designs. This is also the vision of the campus' CETL regarding blended learning. Therefore, part of the intervention will facilitate an awareness of the vision by the faculty (Bass & Avolio, 1993). The communication of this vision or goal may also set the foundation for faculty to be engaged in creative thinking and problem solving (Gregory, Hardiman, Yarmolinskaya, Rinne, & Limb, 2013).

The design of the intervention must also be dynamic or flexible, allowing faculty to be engaged and innovative. Intellectual stimulation is another component of transformational leadership which Bass & Riggio (2006) see as the provision of avenues for followers to be creative. An intervention, in this regard, must ensure that faculty adhere to instructional design principles for blended course designs and create avenues for them to be innovative in their designs and technology use (Gregory et al., 2013). This may mitigate the underlying causes of the POP such as the lack of faculty efficacy and preparedness (Cho & Rathburn, 2013; Donnelly, 2014).

Once the vision for blended learning at the UWI is established, faculty must then become motivated as per transformational leadership theories (Bass & Riggio, 2006). Faculty must be motivated to participate in the treatment. An intervention should

therefore have an incentive, such as reduced workload or a certificate, that may motivate faculty in this regard. The provision of incentives may provide inspirational motivation (Bass & Riggio, 2006) that may inspire faculty "to achieve the shared vision [and] enhance confidence among followers that the collective goals will be reached" (Wang & Howell, p. 1141).

According to the needs assessment, faculty were willing to incorporate technology into their instructional practices but have become somewhat despondent due to the many hindrances the management of such technologies has created. An intervention would therefore need to provide an avenue for participants to communicate and address these issues early in the program before progressing to more proficiency-based activities. According to Bass (1985) and Lafferty and Alford (2010), psychological or neuroscientific mechanisms require more immediate attention, if participants are to feel motivated to change or proceed through the program. A transformational leadership approach may therefore help in dealing with stakeholders to implement the intervention, and more so in motivating faculty to participate in the treatment and change toward a more blended course design.

## 3.5 Theoretical Frameworks: Professional Development, Blended Learning and Instructional Design

Conceptual frameworks and/or models (professional development, blended learning and instructional design) may also be needed to inform an intervention that effectively mitigates the POP. The theoretical frameworks may help develop further details of the intervention such as content, teaching techniques, structure and mode of delivery.

### 3.5.1 Professional Development

Within the academic fraternity, professional development is often seen as an avenue to bring about change in various practices such as pedagogy (City & Elmore, 2010; Friedman, 2012; Fullan, 2011). In such instances, professional development initiatives almost always aim at or affect the educator more than the students or other components (Lunenburg, 2011). The principle behind this trend is that educational institutions cannot be improved without improving the skill set and expertise of their teaching staff (Darling-Hammond, 2008, 2009a; Lieberman & Darling-Hammond, 2011). The UWI's faculty is the target group in the context of this research intervention. Addressing their needs and concerns, and preparing them through professional development will subsequently bring about the change for blended learning envisioned by the campus' senior management (Darling-Hammond, 2010a, 2010b).

As previously mentioned, this POP is two-dimensional, comprising of an instructor level and an institutional level. In like manner, facilitating change through professional development is two-fold. While the faculty remains the target group for professional development in this context, the organization may also need to be engaged since it provides the contextual framework and environment for the training and change to be implemented (Evans, 2011). Any possible plan of mitigation or proposed intervention that fails to engage both the faculty and the institution (UWI) may result in minimal impact or change (Bulach, Lunenburg, & Potter, in press) in faculty, instructional practices and in blended learning on the campus.

Considering these two dimensions, successful professional development is not only informed by institutional policies and individual needs, but it must also take into

consideration the systems and infrastructure that most directly influences faculty (Elmore, 2005; Lunenburg & Irby, 2006). The findings from the needs assessment have already indicated some of the issues that faculty have with the university's systems and infrastructure, which they find to be insufficient and hindering to blended learning and more specifically to their teaching with technology in a systematic way. Therefore, considering an individual and institutional scope is one of the first tenets of implementing change through faculty's professional development (Fullan, 2010; Guskey, 1999; Guskey & Huberman, 1995; Hargreaves & Fullan, 2010; Lieberman & Darling-Hammond, 2011).

To bring about change, successful professional development programs should work in tandem with the faculty's regular duties and responsibilities. The needs assessment indicated that the professional development certificate programs, such as the CUTL program, were strenuous and generic or did not connect to faculty's specializations. However, Guskey and Huberman (1995) posit that while the ultimate goal or vision might be big, the professional development and change must be ongoing and incremental (Lunenburg & Ornstein, 2012). Lunenburg & Ornstein (2012) conducted research on teacher training that was incorporated in internship programs at several state education agencies such as California, Kentucky and Wisconsin. They found that while these initiatives were ambitious, educators still needed internal support systems and strategies for their continual learning following their completion of the training programs. Professional development initiatives should, therefore, be informed by long-term goals that are based on a vision (Lunenburg, 2011), which is accompanied by a strategic plan (Goodstein, 2011). In this context, the vision and strategic plan is for blended instruction and learning.

Collaboration is another component of successful professional development. The design of the intervention program should provide opportunities and avenues through which faculty can communicate, interact and collaborate (Harrington-Mackin, 2008). This minimizes the possibility of their feeling uncomfortable or isolated during the program (Hargreaves & Fullan, 2010; Spector, 2011). The need for collaboration is even more greatly increased if the professional development program is online/blended. Fletcher (2011) posits that the aforementioned possible weaknesses can be mitigated if other staff or departments in the institution are engaged such as administrators, non-academic staff, the IT department and support staff. In this research and throughout the proposed intervention, the university's support staff and services should be strongly engaged. Abdullah, DeWitt and Norlidah (2013) further attest to the need for the inclusion of support personnel and stakeholders in their research on school leadership and the use of technology among educators. They conclude that senior management, technicians and administrators are needed to motivate, empower and support educators and thereby implement change in the organization (Abdullah, DeWitt & Norlidah, 2013).

For faculty's new practices to be retained, providing feedback is an essential component of professional development (Sisk-Hilton, 2011; Marzano, 2011). More than the dissemination of information, effective professional development programs bring about change in faculty's instructional practices by reinforcement of desired competencies and skills. Not only does this build motivation for faculty to change and improve their practices, but it also improves their confidence in implementing the desired change or outcome (Christian, 2010; Clark, 2010; Hanif, 2010). By creating avenues for faculty feedback, professional development programs, particularly in the online or

blended environment, are essential in improving faculty's instructional practices (Sisk-Hilton, 2011). In the case of the UWI and the POP, avenues for positive reinforcement of faculty's systematic approach to teaching with technology must be provided in the professional development program or intervention. This is more likely to ensure that such practices are maintained by faculty, which will aid in the accomplishment of the senior management's vision for blended learning on the campus (Lunenburg, 2011).

Professional development programs are more effective in bringing about faculty change when publicly endorsed by the institution's management (Marzano & Waters, 2010). With this, there is more motivation not only to participate, but to succeed in the professional development program and sustain the changes faculty have made in their practices. They are less likely to have an aversion to change, professional development and teaching with technology if they are cognizant of the benefits and support they may receive, such as financial, promotional and workload rewards and incentives (Hargreaves & Fullan, 2010; Spector, 2011). In this research, it may even subsequently motivate other faculty to enroll in the professional development program, and bring change in faculty for blended course designs.

The success of the proposed intervention would be greater if it is integrated with the institution and its vision and strategic plan. More than being a benefit for the individual faculty member, the participants must also see the professional development program as being a benefit to the institution through the integration of changes as part of a larger framework of improvement (Smylie, 2010). Such changes should, therefore, be incrementally linked to subsequent substantial improvements (Blankstein, Houston, & Cole, 2009; Fullan, 2005), and a shared goal or collective responsibility among faculty

for student learning (King & Newman, 2001). Newman, King and Young (2000) further postulate in their research that school transformation requires all stakeholders or contributors to the community of learners in a professional development context to be involved. These include faculty as well as senior management and administrators. To bring about such an organizational change, Newman, King and Young (2000) concluded that new resources and skillsets are required, which include the creation and effective use of assessment instruments, instructional materials and technology. Therefore, professional development is not only necessary but should be incremental.

Regarding faculty technology training, Cohen (2011) has shown that one-time training or professional development workshops are not substantially effective. Faculty have diverse needs when it comes to teaching with technology (Iskander, 2009). Online or blended professional development programs should be innovative and relevant or contextual (Iskander, 2009), and provide faculty with avenues to create, practice, and integrate what they have learnt (Combs, 2010; Rothwell, 2010; Seidel, 2010). Additionally, these professional development initiatives require ongoing training and support as opposed to a one-time session (Katz, 2010; Tomei, 2009). Not only is this essential to effective professional development programs but this faculty also indicated their need for ongoing training and support in the needs assessment.

In a study by Harrington (2009), faculty reported that their technology training was too short and fast-paced, and lacked any follow-up support. Faculty were not given time to practice, were not comfortable using the technology, and the intended change was not accomplished. By contrast, a study that was subsequently conducted by Seidel (2010) emphasized the impact of ongoing formal and informal support and training. In this

study, faculty reported spending approximately thirty-six (36) hours a year learning how to incorporate technology into their instructional practices. Sixty percent of that time faculty worked alone with the technology, and seventeen percent of the time was spent with a support specialist or consultant and their other colleagues. Only thirteen percent (13%) of that time was spent in training sessions and courses on technology in education. Katz (2010) therefore concludes that using professional development to train faculty in teaching with technology requires ongoing support.

While professional development is integral to faculty growth and preparation, in this research, it was found that they needed to be prepared and comfortable integrating technology in their courses/instruction in a systematic way. This requires planning and strategic coordination of teaching approaches, technology tools, and instructional activities to facilitate learning. Therefore, professional development in this context should provide faculty with opportunities to engage in critical reflection on their instructional practices and to incorporate their new knowledge into course content and design, pedagogy and the teaching and learning process (Darling-Hammond, 2009a).

The literature suggested that the intervention should not be a one-day workshop as is traditionally provided on the campus. Rather, it should be an ongoing training course that will be heavily informed by and designed on the TPACK model as stated in Chapter One and the COI framework (Garrison, 2017) (Figure 5). The duration of the course will therefore be reminiscent of the thirty-six (36) training contact hours faculty received in Seidel's (2010) study. They will enroll in this blended course using an online platform, and they will be introduced to a range of pedagogical principles, technology tools and best practices in blended course design on the campus' LMS. The faculty, however, will

remain as the content specialists for the blended courses they will incrementally design throughout the intervention.

It should also be designed within the context of the existing resources and infrasturcture in adherence with the blended learning policy. (Thurab, 2013). Abdullah, DeWitt & Norlidah (2013) observed in their study on teaching with technology at a Malaysian school, that context is important, perhaps even more so in the online learning environment, and while the general context of this research is the UWI St. Augustine campus, faculty may have their differentiated individualized or departmental contexts. These diverse backgrounds or contexts can affect the possible changes faculty can initiate regarding the instructional practices within their departments. The intervention must therefore allow for flexibility to the contexts of its participants as is the case with most successful online training courses (Benson & Samarawickrema, 2007; Moore & Kearsley, 2006; Oliver & Herrington, 2001).

### 3.5.2 The Community of Inquiry (COI)

The development of a Community of Inquiry (COI) has also been frequently used and proven particularly as an effective avenue through which professional development and blended course design can be successfully accomplished (Garrison, 2017). According to Garrison, Anderson, and Archer (2000), the COI framework facilitates meaningful learning through three primary elements. As seen Figure 3.1, these elements are the social presence which facilitates meaningful interaction and relationships among faculty in the community, cognitive presence which promotes the exploration, processing and application of ideas, and the construction of meaning, and the teaching presence which is

the facilitator's role and practices in the teaching and learning process (Akyol et al., 2009; Rourke & Kanuka, 2009).

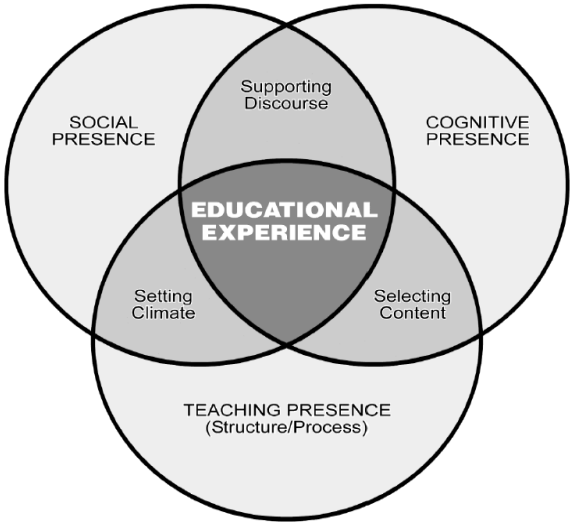



*Figure 3.1.* The elements of the COI (Garrison, Anderson & Archer, 2000, p. 88).

More specifically, the cognitive presence is the extent to which individuals are able to engage in sustained reflection and discourse towards the construction of meaning (Swan, Garrison, & Richardson, 2009; Garrison, Anderson & Archer, 2000). These reflective discourses allow for the exploration, sharing and brainstorming of ideas among individuals in a model of a practical inquiry (Garrison, Anderson & Archer, 2000). Garrison and Arbaugh (2007) conducted an investigation of COIs for online learning, which explored the impact of cognitive presence, and found that most posts in an online discussion forum focused on investigations where participants brainstormed and shared their ideas on a particular phenomenon or topic. However, other studies by Luebeck and Bice (2005), Meyer (2004) and Murphy (2004) have revealed that inquiry via online discussions usually does not go beyond the exploration of ideas. Garrison and Arbaugh (2007) maintained that this phenomenon may have occurred because the nature of

assignments and quality of instructions did not sufficiently engage online participants. In studies conducted by Murphy (2004) and Shea and Bidjermo (2008), when participants were given explicit instructions and engaged to solve real life problems, progress was made from exploration to resolution. Along with the cognitive presence, teaching presence is still necessary in the COI.

Another component of a COI is the social presence. Social presence is the relationships and the quality of computer-mediated communication among participants. A study conducted by Gunawardena (1995), found that participants in online discussions were able to clearly project their personalities with just text. Social presence should therefore be inherent in such online activities and forums, especially as it includes the development of the community and encompasses the nature and level of collaboration among participants in an online or blended course. The learning experience in a COI is contextually grounded and socially situated (Dewey 1959). Lipman (1991) further postulated that "the reflective model is thoroughly social and communal" (p. 19). Social presence impacts learning (Swan, Garrison, & Richardson, 2009).

This presence can be based on three classifications (Rourke, Anderson, Garrison & Archer, 2001; Weiner & Mehrabian, 1968). These are affective expression, which includes the sharing and/or expressions of beliefs and emotions among participants, open communication where participants establish comradery and commitment, and group cohesion where participants interact based upon a common intellectual interest or task (Swan, Garrison, & Richardson, 2009). Swan (2003) explored the ways in which social presence is developed among online students. The students were enrolled in an online graduate-level course. His coding included instances of affective expression or indicators

such as humor, paralanguage and self-disclosure, cohesive indicators such as greetings and reflections on the graduate course or learning experience, group referencing, and interactive indicators such as personal advice and approvals among the students in the online course. In a sample of 235 discussion posts, Swan (2003) recorded approximately 6 indicators of social presence per post.

Linking social presence to success in online or blended courses, Tu (2000) found that course design was a major factor. Using elements of social learning theory, he distinguished three components of course design which influenced social presence. These were social context, online communication and interactivity in which reciprocal communication patterns and timely responses were included. Garrison (2007) postulates that social presence is a necessary component for cognitive presence since "social presence must be directed toward learning outcomes" (Swan, Garrison, & Richardson, 2009, p. 11). The goal of creating social presence in the COI is therefore to facilitate learning.

The third and perhaps the most important element in the context of this research is teaching presence, and this is the structure and leadership that is needed to make the COI effective. Dewey (1938) placed the responsibility on the faculty/instructor to establish goals and initiatives in the COI while maintaining flexibility. Swan, Garrison, and Richardson (2009) postulated that "teaching presence is established by attending to cognitive and social presence challenges in a collaborative COI." (p.12). Anderson, Rourke, Garrison and Archer (2001) defined teaching presence more specifically as "the design, facilitation and direction of cognitive and social processes for the purpose of

realizing personally meaningful and educationally worthwhile learning outcomes" (2001).

With regard to this definition, and also within the context of online teaching, teaching presence can be classified into three categories (Anderson et al., 2001). Design and organization refers to the creation and planning of instruction and collaborative learning activities. The second category is facilitating discourse, where the facilitator must guide and ensure that participants in the COI remain focused on the objectives of the group in their online activities and communication such as group discussions. The third category of teaching presence, direct instruction, includes the instructor providing information and clarifications, summarizing discussions, and facilitating cognitive awareness among the COI participants (Anderson et al., 2001). Teaching presence in the COI for online learning is further supported by research from Murphy (2004), Swan and Shih (2005), and Wu and Hiltz (2004). In a study conducted by Shea, Li, Swan and Pickett (2005), teaching presence was strongly correlated with developing a sense of community among participants in online courses. Teaching presence has also been associated with increased interaction, perceived learning and satisfaction among participants in a COI (Jiang & Ting, 2000; Shea, Pickett & Pelz, 2003).

COIs for online or blended learning have been proven as highly effective approaches for all participants (Garrison, 2017). It promotes and focuses on "the active and creative engagement of learners to think and learn collaboratively" (Garrision, 2017, p. 28). The COI ensures that "the learning experience is not defined by the technology [but that] the potential of new and emerging technologies must be judged by the educational transaction and intended learning outcomes" (Garrision, 2017, p. 28). Based

on research, Garrision (2017) further stated that "there are distinct advantages to creating a community of inquiry in online and blended learning environments. The permanence of text-based communication lends itself to reflection and the ability to challenge thoughts as well as edit text and rewrite positions" (p. 28). It therefore provides the opportunity for the learning experience to be a more iterative and fluid process, where the learner can review, rewrite, restructure and re-submit work. This may be necessary and useful within the context of a faculty professional development initiative.

Ling (2007) conducted an investigation in which tertiary level students were enrolled in an undergraduate distance course in Information Technology (IT). Two tutorial groups were engaged in a collaborative online learning environment via LMS chat rooms. A survey was used to measure the extent of learning support among students and their tutors online. Chat transcripts were also used and reflected participation in online tutorial discussions. The survey revealed the positive impact of cognitive and teaching presence as students were able to share and clarify ideas with their peers and tutors in the discussions. Additionally, discourse analysis of the chat transcripts showed that conversational digressions aided in developing social relationships as students supported each other in completing the course. Ling (2007) therefore concluded that all elements of the COI model are needed for effective learning in a blended/online environment.

But the COI model is not limited exclusively to teaching and learning among undergraduate students. It can also be used for faculty development. A study conducted by Rice, Sorcinelli and Austin (2000) led the researchers to conclude that "new faculty want to pursue their work in communities where collaboration is respected and

encouraged, where friendships develop between colleagues within and across departments, and where there is time and opportunity for interaction and talk about ideas, one's work, and the institution." (p.13). As indicated by the researchers, current trends in faculty professional development initiatives are moving away from single one-day workshops or "'shotgun' approaches [which] often do little to promote real change" Slavit, Sawyer and Curley. Research conducted by Lieberman (1995) illustrates the current need for more community-based approach to faculty training and development, where "collegial network is fundamental" (Vaughan & Garrison, 2007, p. 141). This may occur in the proposed intervention if opportunities for collaboration and interaction are provided as faculty design their blended courses.

There are several similar initiatives or models that adopt a network or community-based approach to faculty or professional development. One of these is the Visible Knowledge Project (VKP) which promotes innovation and effective authentic learning with technology via a systematic inquiry into faculty's instructional practices. The community of practice (COP) framework (Wenger, 1998) was used for the VKP study. A similar approach was implemented at the University of Central Florida (Dziuban, Hartman, Moskal, Sorg, & Truman, 2004) and subsequently at the University of Wisconsin (Garnham, & Kaleta, 2002). In both studies, faculty were being trained to plan, design and develop effective blended courses. For the former study, a blended approach to faculty development was used. A survey revealed that eighty-seven percent (87%) of faculty in this study found that they changed their approach to teaching as a result of teaching a blended course.

More than just facilitating creative problem solving, the establishment of improved instructional practices and blended course designs at the UWI, the COI may also provide an avenue for mentoring among faculty, which plays a significant role in the improvement of faculty's instructional practices (Russell & Russell, 2011). With social presence incorporated as an element of a COI, mentoring can be more effectively facilitated among faculty toward the improvement of instructional practices and blended course designs. Simonsen, Luebeck, and Bice (2009) investigated the use of mentoring in a technology-mediated group of teachers (COI) toward faculty development. The researchers analyzed 1,600 messages shared among faculty in an online platform. They found that faculty were mentoring each other on pedagogical concerns that ultimately led to their improvement (Simonsen, Luebeck & Bice, 2009).

Research by Anderson, Rourke, Garrison & Archer (2001) and Donnelly (2013) has shown that problem-based learning via a blended professional development program and a COI is an effective faculty-centered approach that stimulates collaboration, creative thinking, problem-solving and improved efficacy of faculty in blended instruction (Cho & Rathbun, 2013). However, a team of individuals or 'champions' is needed for this intervention to be successful (Macdonald-Ross & Waller, 2000; Rowntree, 1990; & Anderson, 2008). This team may comprise IT Specialists, Administrators, Instructional Designer, Instructors and Managers.

In a study by Donnelly (2013), the course instructor, as well as the tutor for the learning community, are particularly important as they engage and motivate participants in the learning experience and in improving their efficacy in teaching with technology. To facilitate the effective coordination of projects, practices and creative problem solving

among faculty in the COI, a project-based tutor (PBL) may be needed (Donnelly, 2013). This tutor must facilitate the three elements of a COI (cognitive, social and teaching presence) to focus the faculty on tasks while brainstorming ideas and solving problems related to blended course designs (Donnelly, 2013). In this context, the researcher may also function as the tutor.

As seen in the literature, one approach to professional development is through an ongoing professional development program. This program should incorporate elements of the TPACK and COI frameworks via the program curriculum or instruction, and through collaborative activities among faculty in the program. Based on the research done by Seidel (2010), Katz (2010) and Harrington (2009), the COI and TPACK framework may be more effective if it is provided in conjunction with an on-going professional development course as opposed to a single professional development workshop. One means of delivering professional development content effectively is through a blended mode (Donnelly, 2013).

### 3.5.3 Blended Learning and Faculty Development

Professional development may be delivered face-to-face, online or through a conflation or hybrid of online and face-to-face components, but the content in a professional development program may be more effective if it is blended (Donnelly, 2013). Blended learning is a pedagogical approach (Dziuban, Hartman & Moskal, 2004) defined as "the combined use of face-to-face and online technologies for teaching and learning" (Thurab-Nkhosi, 2013, p. 81). It capitalizes on the human and social interaction of the face-to-face classroom and the efficiency and competencies of the online environment, and as such, it remains a critical strategy for learning, training and

development in higher education institutions (Cobcroft, Towers, Smith, & Bruns, 2006; Means et al., 2010). Performing a meta-analysis of 113 K-12 students who were divided into three subsets, Means et al (2010) also emphasized these benefits of blended learning as opposed to conventional modes of delivery in their research on evidence-based practices in online/blended learning.

Along with its policy for blended learning, the UWI's senior management established its strategic plan to enhance the teaching and learning process through technology. Many measures have been taken to provide the campus' students with the blended learning experience (Thurab-Nkhosi, 2013). However, this has not necessarily been the case for the campus' faculty, who are expected to facilitate students' learning in the blended environment. Most of the initiatives for faculty development on the campus occur primarily as face-to-face workshops. Thurab-Nkhosi (2013) reviewed the policy for blended learning on the UWI and following an analysis of data that were collected from the campus' LMS and the CETL's workshop attendance records and schedules, found a lack of online course activity. She therefore concluded that while one-time face-to-face workshops may be easier to sustain, within the context of the campus, they appear to be the least impactful form of faculty development (Thurab-Nkhosi, 2013).

Nevertheless, online or blended pedagogy continues to be a challenge for most higher education institutions particularly with regard to faculty training and development (Fox & Herrmann, 2000). Despite this, Graham (2006) still postulates that blended learning course designs will continue to increase primarily because of the many advantages that they provide (Aspen & Helm, 2004; Ryle & Cummings, 2007). This assertion in conjunction with the globally high demand for blended learning, provides a

rationale for blended learning for faculty training and development (Thurab-Nkhosi, 2013), which can be successful if specific principles of professional development are followed (Fullan, 2011; Lunnenburg, 2011).

Using a blended approach for the intervention may provide more benefits than a mode of delivery that is solely face-to-face or solely online (Donnelly, 2013; Thurab-Nkhosi, 2011). But in order for this approach to be effective in a professional development program, instructional design is needed to deal with the structure, sequence and assessments in the program. Instructional design therefore adds another level of specificity to any professional development initiative/program.

### 3.5.4 A Systematic Approach: Instructional Design Principles in Blended Course Design

In this research, the intervention needed to model what it expected to see in participants, so they could adopt a more systematic approach to blended course design. The intervention had to apply instructional design principles in its curriculum and delivery (Swanson, 1999; Brethower, 1995), indicated by the establishment of the learning objectives, teaching techniques, modules that comprise the intervention, organization of these into a logical sequence, and assessment strategies. A systematic approach may be seen by applying the principles of instructional design, which may be used to create the intervention and for participants to emulate.

Baturay (2008) defines instructional design as "the existing plan and processes for any instruction [...] as a guide indicating how to implement an instruction" (p. 471). The process has several components such as assessment and evaluation. Morrison, Ross and Kemp (2010), as well as Dick and Carey (2009) have put forward various models of

instructional design, highlighting its different components and fluid nature that is highly adaptable to the context, needs and outcomes of both instructor and learner.

Instructional design is a systematic approach/process to the development of instruction, which also incorporates technology. In fact, Baturay (2008) states instructional design can be understood as a plan whereby educators outline their instruction, assessments, activities and resources prior to teaching or course delivery. This helps to make teaching more effective while enhancing the learning experience that is ultimately evident in the students' performance. This plan however, must be highly flexible, catering for the ad hoc needs of the students and other variables that may take effect (Baturay, 2008). The intervention should model this flexibility to allow participants to emulate.

Instructional design can be seen as a system defined as "a set of objects together with relationships between their attributes" (Hall & Fagan, 1975). One benefit in seeing instructional design as a system is that it allows one to see the connections between the different components of the instructional design process. This shows that ignoring one part can have serious implications on other components and adversely affect the entire instructional design process or output. The intervention should illustrate to participants the necessity of each component in their blended course designs. Models such as the Dick and Carey model (1978) are used in training offerings on the campus but there is rarely any follow through to their use by faculty in their instruction or course contexts as seen in the needs assessment. The Morrison, Ross and Kemp (2010) approach appears to emphasize the importance of analyzing the learners and their needs, which inform everything else. An analysis of learners' needs is only done on the campus after courses

are completed. In this research, participants will learn to implement a more systematic approach to guide their blended courses. The intervention should model the desired goal or output. As such an analysis of the participants in the intervention will need to be conducted. Not only will this help to gauge and meet participants' needs but it will help to make the necessary adjustments along the way to accomplish this goal.

Instructional sequence is another component of a systematic approach that should be applied to the intervention via its delivery and curriculum. Instructional sequence may be seen as cognitive-based models (CBM), which suggests that learning outcomes may vary fundamentally based on the content, context and the learners and their cognitive demands. These differences and demands may be supported by specific instructional methods or conditions of learning (Wilson & Cole, 1991). Gagne (1966) and others put forward instructional models to support the internal and/or external "conditions of learning". Gagne's (2005) Events of Instruction, Keller's (1987) ARCS Model and the Cognitive Load model/theory by Kester et al (2003) are some of the instructional sequence models that may inform the organization or design of curriculum to help faculty's incremental use of a systematic approach to technology use in a blended environment.

A systematic approach is two-dimensional in this research. It should inform the design of the program, and participants' instructional practices by the end of the treatment. The design of the intervention should incorporate and model CBM and other tenets of instructional design, which participants will emulate as they design their blended courses.

## 3.6 The Proposed Intervention

To address the POP and some of its underlying factors and causes, namely faculty efficacy, a lack of preparedness, and negative perceptions, a blended professional development (training) course was proposed. This blended course was offered through the campus' School of Education (SOE) and aimed to orient faculty on the campus' policy for blended learning and provide training for faculty in using instructional design principles in blended course design. In keeping with the data gathered in the needs assessment, this professional development course was designed as an on-going faculty training course, spanning a duration of five weeks, in which faculty receive a certificate upon completion.

The 5-week professional development course was proposed to be delivered partly online on the campus' Learning Management System (LMS) (Appendix A). Faculty currently have access to the LMS, but, not all of them have been using it. This LMS was used to deliver the intervention or training program to further encourage faculty to make use of the platform to succinctly design and implement their blended courses even after their completion of the training program. Further details of the intervention and its implementation are provided in Chapter Four.

### 3.6.1 The Intervention and the Community of Inquiry (COI) and TPACK Frameworks

Incorporated in the professional development (training course) course were two frameworks, the COI and the TPACK which guided the content and structure of the intervention program. They comprised the curriculum of the training course, which faculty were also required to incorporate as they designed their blended courses on the campus' LMS. As seen in the instructional sequence (Appendix A), the intervention was

designed for participants to be familiarized with the two frameworks which encompassed all systematic and instructional design principles of blended course design. They were then required to create their courses in the LMS which included elements of the COI such as teaching presence, social presence and cognitive presence, in the blended courses they designed throughout the program. In so doing, the program was designed to model what it expects or requires from its participants – this approach is in keeping with the learning theories mentioned in Chapter One, and the aforementioned transactional leadership theories which advocate modelling, mentoring, motivation, creativity and emulation.

Combined with the interactive instructional strategies such as project-based and collaborative learning, the professional development course was designed to encourage faculty to work together and learn from each other like a COI (Swan, Garrison, & Richardson, 2009; Anderson, 2008; Garrison, Anderson and Archer, 2000), and possibly make participants in the program the core group of faculty to provide a further thrust to the university's blended learning policy and creative blended course designs (Preece, 2010; Harasim, 2012).

As previously mentioned, these models were specifically designed for online and/or blended course designs, and the professional development course (intervention) exemplified their implementation and also engaged faculty in using them for their blended course designs. Both frameworks were combined to address the two primary objectives of this research – to address faculty perceptions and to address faculty efficacy in blended course design respectively. The blended professional development course worked in conjunction with the COI and TPACK frameworks for faculty to construct

systematic blended course designs on the campus's LMS. The precise use of these frameworks in the intervention will be further detailed in chapter four.

## 3.7 Conclusion

Research supports the value of transformational leadership in pedagogical change. The needs assessment showed that most faculty are not thoroughly cognizant of the policy for blended learning that has been implemented on the campus 9 years ago. Through the theories of transformational leadership, one can identify that an underlying cause of the POP is that the vision and motivation for a change towards blended learning have not been properly communicated to faculty by the campus' senior management (Grant, 2012; Hoffman et al., 2011). This is perhaps an additional reason for the lack of buy-in from faculty about changing their instructional practices to teach with technology (Hoffman, Bynum, Piccolo, & Sutton, 2011). Constructivist theories inform the means through which faculty members can be actively and authentically engaged towards this goal. Frameworks such as blended learning provide a description of the goal – for blended learning and what it should look like or entail.

Therefore, applying constructivist theories and a more transformational leadership approach in the implementation of an intervention to the POP can lead to the successful implementation of blended learning on the campus as evidenced by blended course designs. The first step in this regard is to communicate the vision for blended learning on the campus more effectively, as this "collective vision rouses followers [or faculty] toward the attainment of group goals…" (Simola et al., 2012, p. 16). After that, the next steps for successful implementation of the intervention would entail "aligning individual goals with a shared mission, managing resources, establishing a positive climate of trust

and support, and coordinating information transfer and task completion" (Braun, 2013, p.12).

Using the TPACK and COI frameworks, the intervention or professional development program was proposed and developed to facilitate this change. Through this intervention, it was proposed that faculty's presence in the online course component would be increased and blended instruction and course design would also be improved. It was believed that these frameworks would help this intervention mitigate the POP by improving faculty's blended course designs so that they align more closely with the senior management's vision for blended learning on the campus. Details of the 5-week design and implementation of the blended course or intervention are provided in Chapter 4 and Appendix A.

# 4 Chapter Four – Intervention

## 4.1 Introduction

This chapter outlines the proposed intervention and its implementation. It details the research design, describes the sample and recruitment, and identifies the research methods and instrumentation. It then outlines the data collection and procedures. This chapter also describes the intervention program or curriculum which was heavily influenced by the data from the needs assessment in chapter two and further research on blended course designs.

The needs assessment gave further insight to faculty's arbitrary use of technology by highlighting many underlying factors or causes. These include a lack of knowledge regarding the campus' policy for blended learning, faculty attitude toward teaching with technology, as well as faculty's need for on-going training as opposed to the short workshops they currently receive. It also emphasized the apparent lack of resources and infrastructure for blended learning on the university campus. The research goal therefore was to build efficacy and improve faculty attitudes to blended course designs. The research questions were:

1. To what extent does a professional learning experience based on TPACK and a COI approach improve faculty's attitude toward, and perceived efficacy in, blended course design at the UWI?

**2.** How can a professional learning experience based on TPACK and a COI approach increase course quality as aligned with the OSCQR rubric and COI design?

### 4.1.1 The Intervention.

An intervention was proposed to provide professional learning to faculty at the UWI to increase their efficacy in designing blended courses. The purpose of the intervention was to address faculty perceptions of Technological Pedagogical Content Knowledge (TPACK) and improve the design of their courses through a Community of Inquiry (COI) approach and application of the Open SUNY Course Quality Review (OSCQR) Rubric for Assessing Blended/Online Course Designs. The professional learning intervention was designed to last for a total of 18 hours over a duration of 5 weeks of instruction focusing on the UWI's blended learning policy, instructional design models, understanding instructional contexts, creating an instructional sequence, and building a blended course in the campus' LMS based on the COI framework (Appendix A). It was designed for participants to acquire new skills (Appendix B) following exposure to various instructional strategies, materials and resources (Appendix C) in the program.

Upon acceptance into the program, participants were enrolled in a course that comprised 5 modules (Table 4.1). The first module familiarized participants with the campus' policy and strategic plan for blended learning, its LMS and exemplary blended course designs. It also provided an overview of the TPACK and COI frameworks. Participants attended a 2-hour face-to-face classroom session. By the end of this module, participants were given a blank course shell or sandbox in the campus' LMS. They also engaged in activities (discussions and collaborative tasks) in which they identified the benefits and key features of a blended course. Using an online forum, participants discussed some of the problems they encountered designing blended courses, and proposed possible

solutions. Participants also wrote a reflection to a specific prompt. By the end of the second week/module, participants compared various instructional design (ID) models for blended courses. They participated in a virtual synchronous class which oriented them to the various ID models, module requirements and activities. This session was also recorded for their review. They engaged in online discussions on various ID Models such as the ADDIE, Kemp, Dick and Carey, Smith and Ragan models and their use in blended course designs.

By the end of the third week and module, participants were able to apply ID principles and the TPACK framework in the integration of technology tools for blended course design. A virtual synchronous class was held to orient them to the TPACK model in great detail and how it integrated with the ID models covered in the previous module. This session also comprised class discussions during which participants did some introspection on their challenges and practice, and provided suggestions to each other's problems. The session was recorded for their review. Using hands-on, authentic, project-based and role playing strategies, participants worked in groups and created a wiki explaining different ID principles, components of the TPACK framework and its fit within the blended learning context at the UWI and the School of Education. They also explored the wiki tool and suggested ways in which they could integrate it into their individual course contexts. The wiki they created in this particular course, however, subsequently functioned as an online resource as they designed and built their blended course designs and completed activities in the program such as the instructional sequence for their individual courses.

Individually, and in some cases collaboratively, participants created an instructional sequence outline of their blended course designs and identified the various

components of ID and TPACK therein. These were submitted via the course site for review. The course instructor reviewed participants' instructional sequence documents and wikis and provided feedback for improvement as they eventually built their blended course designs. In the fourth week and module, participants were introduced to the COI framework and combined this with the ID Principles and the TPACK framework for blended course design. They attended another synchronous virtual session with the course instructor. Activities and teaching strategies such as collaborative and project-based learning were used as participants updated the wiki from the previous module, explaining the different components of the COI framework and its fit within the UWI and SOE blended learning context. They also updated their instructional sequence document from the previous module by including and identifying elements of the COI framework (teaching presence, social presence and cognitive presence) in their proposed blended course designs (Table 4.1). Participants shared their instructional sequence for peer feedback and made further adjustments.

In the final week participants were given time to implement their instructional sequence, and the COI and TPACK frameworks therein, and to design a blended course in the UWI's LMS. They attended a synchronous session with the course instructor which recapped all of the principles of the program and addressed any concerns they had as they moved forward toward their course designs. The participants' activities in this module were hands-on, authentic and project-based as they designed their blended courses in the LMS. To this end, they continued to explore and incorporate several technology tools from a list (Vimeo, Screencast-o-matic, Padlet, online forums, Kahoot, PowToons) in their designs. Clinics were frequently requested and provided in this regard. Their exploration and

integration of these technology tools were done both collaboratively and individually. Following the program, a team assessed the blended courses according to the established OSCQR rubric for blended learning. This was the same rubric and review team of persons from the pre-treatment exercise. Participants also completed the TPACK survey and some participated in a focus group interview regarding their perceptions. This survey and interview comprised the post-treatment data collection phase of the research.

Following the review of their courses, and their completion of the program, faculty received a certificate of completion of the course by the UWI's SOE. This certificate was signed by the UWI's SOE and the course instructor, and functioned as an incentive to participants.

Table 4.1

*Instructional Sequence of the Professional Development/Training Course.*

| | **Objectives** | **Instructional Sequence** | **Elements of TPACK & COI Frameworks** | **Instructional Activities/Strategies** |
|---|---|---|---|---|
| | Identify the components of the policy for blended learning at the UWI | The UWI's Strategic Plan<br>Teaching & Learning at the UWI | Institutional Context, TPACK & COI Overview/Introduction | **Collaborative, Reflective and Inquiry-based Learning, Authentic Learning**<br>Details: Online discussion forum - Introductions, and description of problems with blended learning at the UWI/campus.<br>Reflective Journal Prompt |
| | Outline the basic elements of a blended course | The Role of Technology on T&L<br>Blended vs F2F vs Online Learning<br>The UWI's Learning Management System | Technological Knowledge | **Collaborative, Reflective, Project-based Learning, Modelling, Authentic Learning**<br>Details: Use the readings, tech-tools, and a sample/model-blended course in the LMS to create a modern report illustrating the different components (strengths and weaknesses) of a blended course design. |

Table 4.1*Continud*

| | | | |
|---|---|---|---|
| Compare Various ID Models/Principles for blended course delivery | Understanding Your Instructional Context<br>An Overview of ID Models & Principles | Pedagogical Knowledge<br>Technological Pedagogical Knowledge | **Reflective, Collaborative and PBL**<br>Details: (Online group presentations and discussion on 3 primary instructional design models (ADDIE, Kemp, Dick and Carey, Smith and Ragan models))<br>Reflective Journal Prompt |
| Apply ID principles & the TPACK model in the integration of technology tools for blended course delivery | Selection & Evaluation of appropriate technologies for T&L in course context | Content Knowledge<br>Pedagogical Content Knowledge<br>Technological Content Knowledge | **Hands-on, Authentic, Reflective, and Project-based Learning, Role-playing**<br>Details: Online/face-to-face oral presentations /proposals of ID model and TPACK applied to a course unit/module<br>Reflective Journal Prompt |

Table 4.1 *Continued*

| | | | |
|---|---|---|---|
| Combine ID Principles and the TPACK with the COI for blended course design. | Creation of online activities for learning | COI (Teaching Presence, Social Presence and Cognitive Presence) | **Collaborative, hands-on, authentic, Reflective, and Project-based Learning**<br><br>**Details:** Create an instructional sequence matrix using the template provided, and identify the elements of the COI in it.<br><br>Reflective Journal Prompt |
| Develop/design a Blended Course based TPACK, COI & ID Principles in the UWI's LMS. | Course Design based on TPACK, COI, and your ID & Context<br><br>Intellectual Property & Ethical Issues of BL. | TPACK, COI | **Collaborative, hands-on, authentic, Reflective, and PBL, Modelling.**<br><br>Details: Use the ID model, the TPACK and COI frameworks, and the instructional sequence they recently created, to design a blended course in the LMS<br><br>Reflective Journal Prompt |

## 4.2 Research Design

### 4.2.1 Type of Research

A mixed method, non-experimental design was proposed. The mixed methods design included elements derived from the different types of instruments that were incorporated into the research (Onwuegbuzie & Leech, 2006; Creswell et al., 2003). Four instruments were administered at different phases of the investigation that produced quantitative and qualitative data. The quantitative instrument was the TPACK survey (Schmidt & Koehler, 2009), and the qualitative instruments included journal reflections, focus group interview questions and the OSCQR course review. The use of these instruments and their alignment with the constructs in this research will be further explained in the research methods and instrumentation section below.

A non-experimental design comprises only one group as opposed to having several comparison or control groups. Outcomes were only tracked for this group. All participants in the program went through a pre-treatment and a post-treatment measure via the TPACK survey and the course reviews. As such, the evaluation of this study is more outcome designed as opposed to process designed. One benefit of this design is that the researcher was able to record the changes or outcome indicators (Table 4.1) among participants. Although this approach may have made it difficult for the researcher to clearly identify the intervention as the sole impetus for change due to the absence of comparison groups, the main point of interest was to bring about the change as per the logic models (Appendix H) and causal model (Appendix I). Should the researcher seek a more comparative analysis of persons who received the treatment versus those who did not (Slavin, 2007. Heiman, 1999), the data may be readily available from this current

research and can be compared with secondary data via the campus' databases for subsequent research.

## 4.3 Population and Sample

### 4.3.1 Participant Recruitment

A recruitment email, along with an attached consent form was sent to 25 faculty potential participants at the university's School of Education (Appendix N, Appendix O). Participants were selected for the program based on the order of submission of consent forms until the 25-enrolment limit was achieved. It was originally planned to limit the prospective sample to a maximum of 25 faculty members to ensure the quality, rigor and impact of the program was not compromised (Burmeister & Aitken, 2012). However, only 14-18 individuals responded to the email and submitted the signed consent form – and out of the 18 respondents, only 14 actually participated. The participants were only required to have a course which they recently taught and planned to teach within the next two academic years. This was verified following their submission of the signed consent form via electronic mail. The criteria for inclusion were outlined in the recruitment email and the consent form.

The rationale for selection of criteria was not only aimed at benefiting the program and faculty, but the SOE and the wider university. Regarding the first criterion, the SOE had many of the campus' specialists and practitioners in the broad and multi-disciplinary field of education. Not only did this allow for a more diverse sample for the research, but the results from the program may keep the SOE at the cutting edge, leading the wider university campus in blended course designs. The second criterion suggested that faculty focus on one course which they would realistically redesign for blended delivery.

Using the OSCQR Blended Course Rubric, a team of reviewers conducted a pre-treatment evaluation of the blended courses submitted by at least five random applicants. The selection of courses for this pre-treatment evaluation was based on participants' prior use of the campus' LMS for specific courses – for example faculty who had minimally and/or frequently used the LMS in their courses and significantly lacked the components of the COI such as teaching presence as per Garrison (2017). For quantitative variables and/or data, the TPACK survey was used to measure faculty's perceptions or attitudes at the pre-treatment. Following the pretreatment, prospective participants received a notification of their acceptance at least a week before the program commenced. Upon confirmation participants were enrolled and proceeded through the program.

### 4.3.2 Sample Size and Description of Respondents

The UWI comprises approximately 500 faculty. Out of this general population, an average of 51 work in the university's School of Education (SOE). Although a maximum of 25 participants were catered (50% of the faculty in the SOE), the study began with only 14 participants based on the signed and returned consent forms and completed TPACK pre-treatment survey. These participating faculty were either male or female, and included full-time lecturers, and teaching assistants, comprising several subsidiary departments, specializations and expertise.

Some participants in the program had only been employed at the UWI for less than 5 years but had over 10 years of teaching experience. Others were teaching at the UWI for more than 10 years and also had more than 15 years teaching in other secondary and/or university level institutions. Despite sharing some possible similarities in age, professional department and institution, the participants had different levels of prior

experience in blended instruction. They also possessed varied abilities and learning preferences as the program did not have specific prerequisites for eligibility. They came into the program from different specializations professional backgrounds, and with different teaching experiences and learning preferences. While some participants had teaching experience in other international universities, most of them (80%) only had experience teaching in local institutions.

## 4.4 Research Methods and Instrumentation

This research used 4 instruments to produce both quantitative and qualitative data. The quantitative instruments were the TPACK survey (Schmidt & Koehler, 2009) and OSCQR rubric (Open SUNY). The qualitative instruments included focus group interview questions and reflective journals. These instruments were administered at pre-treatment, mid-treatment and post treatment phases of the research. This mixed methods approach allowed for more insightful data and analyses (Creswell & Plano Clark, 2007). This approach helped to indicate any changes that may have been made by faculty in their attitudes towards and competencies in designing blended courses as a result of the aforementioned intervention (Winer, 1971; Steel & Torrie, 1980). The mixed data further supported and aligned with the definition of the mixed methods approach outlined by Onwuegbuzie and Leech (2006) and Creswell et al (2003) as encompassing the collection, analysis, and interpretation of quantitative and qualitative data in a single study or in a series of studies on the same underlying phenomenon, and as per the aforementioned research questions. Together, the items from the TPACK survey, the focus group questions and the reflective journals aligned or complemented each other in answering the research questions (Onwuegbuzie & Leech, 2006) as it pertained to faculty

perception, for example. The research instruments are described along with the constructs they are associated with in this research (Table 4.1).

### 4.4.1 Faculty Perceptions

The first construct was faculty perceptions. This referred to the preconceived notions and dispositions that faculty may have had toward technology for blended learning and instruction. Perceptions were further refined according to the TPACK framework which was "an understanding of […] pedagogical techniques that use technologies in constructive ways to teach content" (Koehler & Mishra, 2009). This understanding comprised several components such as technological pedagogical knowledge (TPK) as seen in Table 4.1 below and in Appendix J.

Faculty had previously indicated that they believed technology was a distraction in learning environments and blended learning could not be successfully practiced on the campus due to insufficient training, management and infrastructure. The instruments used to measure or evaluate this construct throughout the research were the TPACK self-assessment/perceptions survey, focus group questions and journal reflections. The survey produced quantitative data, the focus group questions and journal reflections provided qualitative data. The indicator for the perceptions included faculty's personal discourse in their reflective journals. As previously mentioned, reflective journals and the TPACK self-assessment survey revealed these attitudes at the beginning of the program, and any changes in attitudes following the program.

#### 4.4.1.1 The TPACK Survey

The TPACK survey (Schmidt & Koehler, 2009), as seen in Appendix E, was a self-assessment perceptions survey instrument. It was designed by one of the founders of the TPACK framework (Schmidt & Koehler, 2009) to measure the different components of the TPACK framework and allowed participants to assess their perceptions of teaching with technology. Schmidt and Koehler, (2009) used it in their research, and it has been used in many other investigations on teacher training for online/blended instruction (Yurdakul et al, 2012; Jang & Tsai, 2013; Sang et al, 2016). More recently, for example, Voltonen et al (2017) used the TPACK survey to measure pre-service teachers' twenty-first century skills. They concluded that respondents became "better aware of their strengths and development needs related to TPACK" (Voltonen et al, 2017, p. 24).

The TPACK survey comprised 49 questions and/or statements which were mostly rating items. Statements were given such as "I can choose technologies that enhance the teaching approaches for a lesson", and persons were required to respond to such statements on a scale of "strongly disagree" to strongly agree". Each of the items in the TPACK survey was classified according to the 7 components or constructs of the TPACK framework. As seen in Appendix J, these constructs include PCK (Pedagogical Content Knowledge) TPK (Technological-Pedagogical knowledge). In this research, participants evaluated their perceptions using the TPACK survey.

#### 4.4.1.2 Reflective Journals and Focus Group Questions

Reflective journals and focus group questions were the qualitative instruments used in this research. The prompts for the reflective journals (Appendix G), and the focus

group questions (Appendix F) were influenced by the TPACK framework and survey (Table 4.1). These instruments were used at different times in the research to measure participants' change during and by the end of the treatment. The reflective journals (Appendix G) were used every week during the mid-treatment stage and prompted participants to reflect on their learning during the 5-week course. The journal prompts were also designed to allow participants to make connections along the way, such as connecting their prior perceptions or attitudes to their learning experience and plans for future practice. These journals were designed to be personal and were only shared with the course instructor via the online LMS.

The focus group questions (Appendix F), by contrast, were designed to prompt a group discussion with the majority of the participants. It was designed for use at the post-treatment phase in this study so participants could reflect on their thorough learning experience in the course. The focus group questions were semi-structured, with five main questions pre-designed for the interview. These questions helped to guide the interview along the construct being measured. The focus group was recorded and transcribed as background data for further analysis.

Together, the TPACK survey, the focus group questions and the reflective journals measured the first construct, faculty's perceptions in blended course designs (Table 4.1). This mixed methods approach provided insight to the first construct during and after the treatment.

### 4.4.2 Faculty Efficacy

The second construct in this research was efficacy. This referred to faculty's competencies in designing blended courses according to instructional design principles

and the COI framework. More specifically, efficacy in this context (Table 4.1) referred to a process of creating a deep and meaningful (collaborative-constructivist) learning experience through the development of three interdependent elements – SP, CP and TP (Garrison, Anderson, & Archer, 2000) (Appendix K). These three elements were designed to create a blended environment that allowed for "greater cohesion which supports increased collaboration […] enhancing metacognitive awareness and ability to learn" (Garrision, 2017, p.106). Faculty's efficacy and any change therein, was indicated by the blended courses they designed by the end of the program. The OSCQR was the instrument used to observe and evaluate these blended course designs for the pre-test and post-test. As seen in Table 4.1, this evaluation was done by a team of assessors to minimize any possible biases.

#### 4.4.2.1 The OSCQR Rubric

The OSCQR (Open SUNY) overlapped with the COI as the rubric contained most of the components of COI plus other aspects such as layout and navigation. The OSCQR was originally designed to improve the instructional design of online or blended courses. It helped to develop and evaluate courses based on six elements. These elements included course overview and layout (CL), course technology and tools (CT), design and layout (DL), content and activities (CA), interaction (I), and assessment and feedback (AF) (See Appendix L for a full description of the OSCQR). The OSCQR Rubric was a course evaluation instrument that used a detailed checklist developed mainly by the Open SUNY (State University of New York) to observe and evaluate blended/online courses. It was designed to address issues relating to instructional design and accessibility of blended

courses in Higher Education based on six primary components which were principles present in the CP, TP and SP of the COI framework.

In addition to the COI framework, the OSCQR review instrument was also used to evaluate other components such as the course layout and navigation, elements that the COI may not have been designed to clearly identify (Appendix L). For example, cognitive presence (CP) was one aspect of the COI for blended course designs. According to Garrison (2017), CP may be identified by the presence of course content or reading material and opportunities for learning in a blended course. Likewise, SP and TP were also components of the COI framework. While SP may be identified by discussion forums, quizzes, and collaborative activities, TP may be identified by frequent and substantive teacher feedback in discussion forums, as well as instructions and synchronous sessions by the teacher (Appendix K). The OSCQR was used to identify and evaluate these indicators and thereby determine the quality of CP, TP and SP among other elements in faculty's blended courses throughout the program (Appendix L).

### 4.4.3 Inter-rater Reliability

A team of assessors conducted the OSCQR course observations/evaluations. This team comprised two online/blended education specialists, one of them was affiliated with the UWI, and the other with an external higher education institution. This team was created to minimize biases and maximize validity. According to Onwuegbuzie and Johnson (2006) and Neuman (1997), inter-rater reliability is a subsidiary of validity and equivalence reliability and is achieved when there is agreement and consistency between or among raters and/or an expert on the measure being employed. This was particularly necessary when the instrument and data were qualitative and opened to subjective

interpretations. The OSCQR was accompanied by a manual that comprised various annotations and specifications designed to guide the use of the instrument. The team of assessors was guided by this manual before and during the course reviews. Before the official review, each reviewer used the OSCQR to review a sample set of courses from faculty who were not in the program. They also used it on the main course site for the treatment. They compared their reviews and documented ways to maintain consistency or inter-rater reliability during the subsequent official review of courses from the participants. This ensured that the instrument was used without biases and that objective and reliable data were produced.

Together, the aforementioned measuring instruments helped to identify the impact of the intervention by illustrating any possible changes in participants throughout the program (Figure 4.2). Combining multiple instruments in the measurement exercises, and using instruments which were designed for and used in several contemporary educational research on technology mediated learning, helped to minimize subjectivity and strengthen the validity, reliability, trust-worthiness and fidelity of the entire research (Vannatta & Banister, 2008; Hastings, 2009; Ruggiero & Mong, 2015).

The selection and use of the journal reflections, OSCQR rubric, TPACK survey and focus group interview, was based on their alignment with other components of this investigation such as the research questions and primary constructs. Table 4.2 illustrates the data collection matrix which summarizes the aforementioned information.

Table 4. 2

*The Data Collection Matrix*

| Research Questions | Constructs | Operational Definitions | Indicators |
|---|---|---|---|
| To what extent does a professional learning experience based on TPACK and a COI approach improve faculty's attitude toward and perceived efficacy in blended course design at the UWI? | **Perceptions:**<br>CK (Content Knowledge)<br>PK (pedagogical knowledge)<br>TK (Technological Knowledge)<br>PCK (Pedagogical Content Knowledge)<br>TCK (Technological Content Knowledge)<br>TPK (Technological Pedagogical Knowledge)<br>TPACK (Technological Pedagogical and Content Knowledge) – (see Appendix J)<br>SP (Social Presence)<br>TP (Teaching Presence)<br>CP (Cognitive Presence) | Perceptions in this research context may be defined based on the TPACK framework, which is "an understanding of […] pedagogical techniques that use technologies in constructive ways to teach content" (Koehler & Mishra, 2009). | Change in knowledge and perceptions as measured by:<br><br>1. Quantitative: the TPACK self-assessment/perceptions survey<br><br>2. Qualitative: Focus group questions and journal reflections |

Table 4. 2 *Continued*

| | | | |
|---|---|---|---|
| How can a professional learning experience based on TPACK and a COI approach increase course quality as aligned with the OSCQR rubric and COI design? | **Efficacy (COI/OSCQR):**<br>SP (Social Presence)<br>TP (Teaching Presence)<br>CP (Cognitive Presence)<br><br>CI (Course overview and Information)<br>CT (Course technology & Tools)<br>DL (Design and Layout)<br>CA (Content and Activities)<br>I (Interaction)<br>AF (Assessment and Feedback) | The COI represents a process of creating a deep and meaningful (collaborative-constructivist) learning experience via three interdependent elements – SP, CP and TP (Garrison et al, 2000) – (Appendix K). These create a blended environment that allows "greater cohesion which supports increased collaboration […] enhancing metacognitive awareness and ability to learn" (Garrision, 2017, p.106).<br><br>The OSCQR evaluates blended/online courses based on six elements –CI, CT, DL, CA, I and AF (Appendix I). It was designed to support continuous improvements to the quality and accessibility of blended courses. | Faculty design of blended courses as measured by:<br>1. The OSCQR rubric, and<br><br>2. The COI Protocol: based on the COI framework. The COI and OSCQR overlap but align with each other. The OSCQR will be used to identify elements of the COI (SP, TP, CP) along with other elements such as DL. |

## 4.5 Data Collection Procedures

This section outlines details about the journal reflections, OSCQR rubric, TPACK survey and focus group interview instruments and their implementation for data collection. It details the procedures in order of occurrence in this research. The instruments were administered at three phases as the pre-treatment, the mid-treatment and the post-treatment.

### 4.5.1 The Pre-Treatment Phase

This phase occurred when persons were applying to the program. As part of the enrollment procedure to the program, and following the previously mentioned recruitment email to all faculty at the SOE and their returned, signed consent forms, the prospective participants were required to complete the TPACK survey (Appendix E) prior to commencement of the program as part of the program application process. Administering the TPACK survey instrument at this initial stage provided data on faculty's attitudes and perceptions of blended course designs before receiving the treatment. The survey allowed prospective participants to reflect and express their perceptions of TPACK. It also facilitated subsequent comparative analyses when the participants completed the program.

The second part of the pre-treatment phase was the first administering of the course observations or reviews. This was done after the aforementioned TPACK survey was completed. As part of the program application process, prospective participants were required to identify one course they taught within the past two academic years. As seen in Table 4.2, the courses they identified were reviewed by a team of assessors using the

OSCQR instrument (Appendix D). The data from this instrument was also used for subsequent comparative analyses.

### 4.5.2 The Mid-Treatment Phase

This phase occurred throughout the duration of the program while participants were in the process of building their blended courses. This phase comprised reflective journals (Appendix G), where participants were prompted to reflect on their progress in and attitudes to blended course design. The journals were incorporated into the instructional sequence and activities of the intervention program (Appendix A). These reflections were done weekly, and provided further insight to any gradual changes in perceptions that may have resulted from incremental exposure to the program.

### 4.5.3 The Post-Treatment Phase

This occurred at the end of the program and the participants completed their course designs. This phase was a three-step process that comprised the TPACK survey, a focus group interview and the OSCQR instruments. Participants completed the TPACK survey after the program, and the data from this was compared with the data from the previous administering of the instrument before the program. Together, this data helped to indicate any changes in participants' perceptions in blended course designs, and also indicated what those possible changes may have been and when the changes in perception did occur.

The second step or instrument in this phase was the semi-structured focus group interview questions. Faculty were asked questions that were informed by the TPACK and COI frameworks such as the selection of technologies for learning in a blended environment. The qualitative data from the focus group interview provided further insight

to the quantitative data from the TPACK survey (Appendices D & E), and provided many benefits associated with mixed method approaches such as strengthened validity in answering the research questions (Onwuegbuzie & Leech, 2006). Together, the items from the TPACK survey, the focus group questions and the reflective journals helped in answering the research questions (Onwuegbuzie & Leech, 2006) as it pertained to faculty knowledge or perception.

The third step of the post-treatment phase was the second administering of the OSCQR instrument. This instrument was used to assess the blended course designs that participants developed during the program. It was compared with the course evaluation data from the pre-treatment. As previously mentioned, the OSCQR instrument identified the elements of the COI framework faculty developed in the new blended course designs. Together, the data indicated the changes in faculty's efficacy in blended course designs.

Following the review and completion of the program, faculty received a certificate of completion of the course. This certificate functioned as an incentive to participants. Not only did this certificate have value as it was produced by the SOE and recognized by the university campus, but was also an extrinsic form of motivation which participants could include on their resumes for subsequent employment and promotion.

The entire data collection process occurred within a two-month period from Late November 2018 to middle January 2019. As seen in the instructional sequence table (Appendix A), the program was designed for a duration of five weeks. During this time, the mid-treatment procedure occurred. The mid-treatment ended by the end of December 2018. The aforementioned post-treatment then followed during the January, 2018. The comparison of the data from the pre-treatment, mid-treatment and post-treatment helped

to illustrate the impact or outcomes of the intervention and the changes it may have brought regarding the constructs and research questions in Table 4.2 (Cohen, Manion & Campbell, 2002).

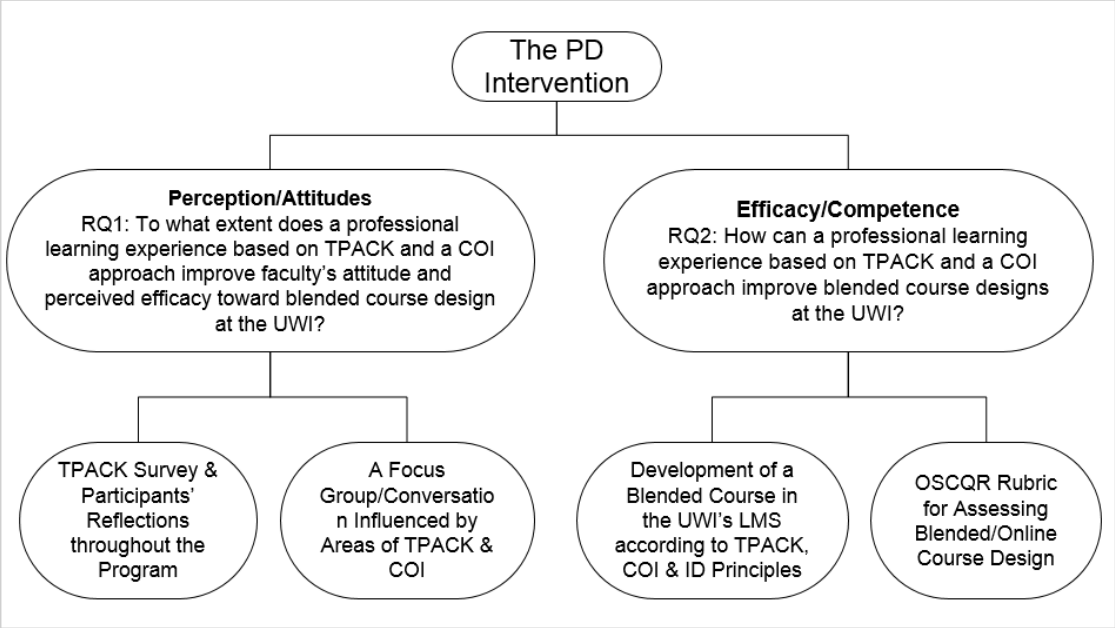



*Figure 4.1.* Outcome Evaluation and Research Design

## 4.6 Data Analysis

To answer the research questions (Figure 4.2), a comparative analysis was conducted on the data from the pre-test, mid-test and post-test data obtained from the aforementioned instruments (Table 4.2). A paired or dependent t-test was conducted of the TPACK survey from the pre-test and post-test to determine the impact of the treatment. The data analysis also included document analyses of the qualitative data obtained by the focus group interviews, journals, and OSCQR course reviews.

### 4.6.1 Quantitative Data Analysis

Given the small sample size, the research questions and data collection procedures (the use of the pre-treatment and post-treatment data collection), a dependent t-test was used for the quantitative data analysis. The dependent t-test used the complete scores of the TPACK survey from the pre-treatment and post-treatment phases along with descriptive statistics to determine a relationship between the two phases and any possible impact or difference (Table 4.2). This test therefore helped "to determine whether any activity or materials [in the program made] a difference in results for participants" (Creswell, 2005, p. 51). An alpha level of .05 was used to make this determination between the pre-treatment and post-treatment TPACK scores. This alpha level was a 5% chance or probability that the null hypothesis was true (Tavakol & Dennick, 2011). The null hypothesis in this research was that participants' TPACK will increase after the intervention. The alternative hypothesis in this research is that participants' TPACK will not increase after the intervention – that is, if there was no difference between the pre-treatment and the post-treatment survey. If the p-value was greater than .05, then it would have indicated that there was no significant difference between the pre-treatment and the post-treatment surveys and that faculty's perceptions on blended course designs did not change. A p-value of less than .05 would have indicated a significant difference between the pre-treatment and the post-treatment surveys.

**Descriptive statistics** were used in this research, along with the t-test, to describe the sample demographics. This part of the analysis specifically addressed the first research question which focused on faculty perceptions (Table 4.2). Creswell (2005) postulated that researchers need "descriptive statistics that indicate central tendencies in

the data (mean, mode, median), the spread of scores (variance, standard deviation, and range), or a comparison of how one score relates to others (z-scores, percentile rank)" (p.181). The data produced from the TPACK survey was automatically divided or coded into the seven constructs of the TPACK framework such as TK, PK, CK, TPK, TCK, PCK and TPACK. The research used standard deviations to identify frequencies, percentages as well as ratios. Frequency referred to the number of participants that can be classified into a particular category or construct such as TK or PCK. Percentage referred to the percent of the sample that coincides with that category or construct. For example, the descriptive statistical analysis may have revealed a high frequency of strong PK among participants that equated to 90% of the sample. In essence, the descriptive statistics was combined with the dependent t-test to provide further details of the kinds of changes between the pre-treatment and post-treatment phases.

Following this comparative quantitative analysis between the pre-treatment and post-treatment phases, a comparative analysis was done with the qualitative data obtained from the focus group interviews and reflections.

### 4.6.2 Qualitative Data Analysis

The document analysis followed the process outlined by Tesch (1990). Tesch identified an eight-step systematic process in analyzing textual or qualitative data. The first step was to get a sense of the whole (Tesch, 1990). In this research context, this was done by reading or reviewing all the data such as the focus interview transcripts or reflective journals. The second step was to select one document and make notes about its content and underlying meaning (Tesch, 1990). In this research, the second step done by selecting a total of five transcripts of documents from each qualitative method. For

example, five pre-treatment OSCQR course reviews were selected, the same was done for the post-treatment. Likewise, five journal reflections were also selected. Notes were made on each of the five transcripts. According to Tesch (1990) and Creswell (2009), the third step was to create a list of topics and group similar topics together which can be presented as a table. Applying a similar approach, the notes from the data were placed into topics. Table 4.2.

The next three steps Tesch (1990) and Creswell (2009) highlighted have to do with reviewing, organizing and classifying the topics, which was also be done in this research context aligning the findings with the aforementioned constructs and research questions. This is where the deductive coding process was applied, as the data was being aligned with the established codes or constructs such as PK (pedagogical knowledge). For example, a review of the interview transcript or the five selected journals revealed instances where participants demonstrated or applied pedagogical knowledge. These instances were classified as PK which aligns with the aforementioned TPACK perceptions construct in this research. Likewise, a review of the qualitative data from the OSCQR provided examples of teacher presence which were coded as COI-TP. Appendix M provides further examples of this as adapted from Garrison, Anderson, and Archer (2000) (see Appendix K for all COI elements, indicators and examples). For similar details on the OSCQR see Appendix L. The OSCQR Rubric: Constructs, Operational Definitions and Indicators. The seventh step was performing a preliminary analysis, and the eighth step was a possible recoding of existing data (Tesch (1990). As mentioned by Creswell and Plano Clark (2007), this document analysis and deductive coding process was a reiterative process.

As previously mentioned, a comparative analysis was also done in the investigation, and used the same eight step process. For example, the data from pre-treatment survey results were compared with the post-treatment survey data. For the OSCQR course reviews, five randomly selected course reviews in the pre-treatment were compared with the course reviews of the same courses in the post-treatment. This comparative analysis was closely tied to the research questions and was useful in correlating the impact of the treatment on faculty's perceptions and efficacy in blended course designs.

## 4.7 Summary

The research design, methods and data analysis were informed or influenced by the two research questions (Table 4.2). The mixed methods approach provided valid and more substantial insight to the impact of the treatment. Based on the research questions, the research focused on two factors, faculty's perceptions and efficacy in blended course design. While the TPACK survey provided insight to faculty's perceptions, the OSCQR, journal reflections and focus group interviews gave insight to faculty's efficacy. The researcher analyzed the data obtained from these instruments during the pre-treatment, mid-treatment and post-treatment tests to identify the incremental changes in participants' perceptions and efficacy, and the overall impact of the program. The impact of the treatment was assessed by answering the two research questions, and mitigating the problem of practice regarding faculty's blended course designs.

# 5 Chapter Five

## 5.1 Introduction

This chapter describes the actual process of intervention implementation, it presents the findings for each research question, and provides recommendations for future research.

The intervention addressed the POP regarding faculty's arbitrary use of technology in blended course designs. To this end, the intervention answered the research questions about faculty perceptions and efficacy, namely;

1. To what extent does a professional learning experience based on TPACK and a COI approach improve faculty's attitude toward and perceived efficacy in blended course design at the UWI?
2. How can a professional learning experience based on TPACK and a COI approach increase course quality as aligned with the OSCQR rubric and COI design?

## 5.2 Findings

The goal of this research was to build efficacy and improve faculty attitudes to blended course designs. The findings addressed the research questions. Findings related to the first question on faculty perceptions were acquired via the TPACK survey, participants' reflections throughout the program, and the focus group interview. Findings related to the second research question on efficacy were obtained via participants' blended course designs in the UWI's LMS according to TPACK, COI and ID principles along with the OSCQR rubric for assessing blended/online course designs. Table 4.2 recaps the constructs affiliated with each research question and the indicators of change or impact of the treatment.

### 5.2.1 Faculty Perceptions - Research Question 1. To what extent does a professional learning experience based on TPACK and a COI approach improve faculty's attitude toward and perceived efficacy in blended course design at the UWI?

As seen in table 5. 1, perceptions or faculty attitude in this research context is based on the TPACK framework, which is "an understanding of […] pedagogical techniques that use technologies in constructive ways to teach content" (Koehler & Mishra, 2009). Change in knowledge and perceptions was quantitatively measured by the TPACK self-assessment/perceptions survey. The focus group interviews and the journal reflections provided qualitative insight to change in knowledge and perceptions. While the recruitment email was sent to over 25 prospective participants, only 18 persons responded and submitted the signed consent form. Out of this, only 14 persons participated in the treatment, and 7 persons fully completed it. This is further elaborated in the research limitations section.

#### 5.2.1.1 The TPACK Pre-Treatment Survey

According to the survey, the majority of participants (64.3%) were females, and were mostly in the 51-60 age bracket (42.9%). They specialized in different departmental fields within Education, ranging from Social Studies to English and Geography. Over 64% of the participants have more than 20 years teaching experience, and have recently taught blended courses. Approximately 65% of the participants had prior training in blended learning or course designs (Table 5.2).

Table 5.2

*Participants' years of experience and training in blended learning or course designs*

| Years of Teaching Experience | Participants' Responses | Population Percentages |
|---|---|---|
| Over 20 years | 9 | 64.3 |
| 16 – 20 years | 4 | 28.6 |
| 11 – 15 years | 1 | 7.1 |
| **Prior training in blended learning or course designs.** | **Participants' Responses** | **Population Percentages** |
| Yes | 9 | 64.3 |
| No | 5 | 35.7 |

However, their prior training did not seem to improve their technology knowledge (TK). The majority of participants stated that they did not know how to solve their own technical problems, neither do they keep up with technological advancements. Only half of the participants frequently played around with technology. But most of them believed that they knew a variety of different technologies and the skills needed to use them. Most participants believed they had sound knowledge and competencies in their specialized disciplines or content knowledge (CK). They strongly believed they can use various ways of thinking and strategies for developing their understanding in their specializations.

The participants perceived themselves as having sound pedagogical knowledge (PK). According to the survey, they believed they knew how to assess student performance and learning in multiple ways, adapt their teaching styles to different types of learners, and use a wide range of approaches in a classroom setting. With regard to their pedagogical-content knowledge (PCK), 87% the participants viewed themselves as having sound knowledge in managing their classrooms, and using effective teaching approaches to guide student thinking and learning in their respective fields. Participants were mixed in their perceptions of their technological-content knowledge (TCK). Over 70% of the participants

believed they did not know about technologies that they could use for understanding and teaching in their respective disciplines.

But they seemed much more confident and unanimous in their technological-pedagogical knowledge (TPK). As seen in Table 5.3, most participants strongly believed they could choose technologies that enhanced the teaching approaches for a lesson, choose technologies to enhance students' learning in a lesson, and correlated their prior training and expertise for thinking more deeply about how technology could influence their teaching approaches. The majority of participants also agreed that they thought critically about how to use technology in the classroom, can adapt technologies to different teaching activities and can ably select technologies to use toward the enhancement of the teaching and learning experience. However, very few participants believed they can do this at an exemplary or high-end level to guide other colleagues (Table 5.3).

Table 5.3

*Prevalent Ratings of Participants' Self-Perceived TPK Pre-Treatment.*

| **TPK Statements** | **Prevalent Responses** | **Number of Participants in Prevalent Response** |
|---|---|---|
| I can choose technologies that enhance the teaching process for a lesson | Agree | 7 |
| I can choose technologies that enhance students' learning for a lesson. | Agree | 7 |
| My training and experience have caused me to think more deeply about how technology could influence the teaching approaches I use in my classroom | Agree | 10 |
| I am thinking critically about how to use technology in my classroom, | Agree | 8 |
| I can adapt the use of the technologies that I am learning about to different teaching activities | Agree | 6 |

| | | |
|---|---|---|
| I can select technologies to use in my classroom that enhance what I teach, how I teach and what students learn. | Agree | 8 |
| I can provide leadership in helping others to coordinate the use of content, technologies and teaching approaches in my department. | Agree | 5 |
| I can choose technologies that enhance the content for a lesson | Agree | 5 |

While most participants (71%) perceived that they can use strategies that combined content, technologies and teaching approaches, many of them still indicated some confusion or insecurity in this regard. Only 21% perceived they had a very high proficiency in combining content, technologies and teaching approaches. Over 78% felt they did not have a high proficiency in this regard, but saw themselves as average, novices or inexperienced. Generally, almost 50% of the participants were neutral regarding their TPK. This may have correlated with their sparse and arbitrary use of technology in their blended course designs as per the initial needs assessment. They all perceived themselves as thinking critically about how to use technology in their blended courses, and may have credited this to their prior training and expertise; however, many of them were neutral or unsure of their abilities to choose technologies that enhanced the content for a lesson (Table 5.3). This prevalent uncertainty continued in the Technological-Pedagogical-Content knowledge (TPACK), as the majority of participants were unsure of their abilities to appropriately combine their specialized content, technologies and teaching approaches.

In the open-ended questions of the TPACK survey, all participants were able to describe an instance where someone modelled blended instruction or where they were the learners in a particular blended course. They were able to describe some of the

technologies, pedagogical tenets and content they were exposed to such as virtual conferencing and brainstorming tools, modelling and collaborative learning. For example, one participant elaborated,

> Plenary session on Action research- writing of research objectives: Some of the content was first modelled via power point presentation and interactive discussion session. Afterwards, a think-peer-share activity was implemented for the teachers to write a research objective, critique and then shared in a general classroom forum. The educator ensured to use representatives from specific areas in sharing their experiences. (D, November, 2018).

Some of participants were unable to identify any exemplary instances, stating for example,

> "I have not had any such experience in the teaching of Geography where all three were combined" (I, November, 2018).

Participants were also asked to describe an instance where they modelled the combination of content, technologies and teaching approaches (TPACK) in a lesson. While some were able to give an elaborate response to this question referring to their use of active learning strategies such as class discussions, and technologies such as the campus' LMS, many participants could not identify such an instance and therefore could not elaborate or answer the question, simply stating "I have not" (L, November, 2018). Others referred to rather dated technologies such as Microsoft PowerPoint, and teacher-centric approaches such as a lecture without any activities for students' learning and engagement. An example of this was seen in this participant's response,

> Firstly, I tried but I don't think that the technology was effectively demonstrated. However, it was an improvement to some that I may have done before. I taught in a Practicum session, the topic was Instructional Learning Objectives. The laptop was used to show my power point presentations. The presentations contained a bit of visual images. (D, November, 2018).

Despite the fact that this participant believed she greatly improved in implementing her TPACK in her teaching practice, she was still reliant on antiquated technologies and

teacher-centered approaches that did not allow for student engagement. When asked to describe their level of expertise in blended course designs, some stated that they were comfortable, but most perceived themselves as below average or not good and needed training or assistance.

The data from the TPACK pre-treatment survey highlighted several phenomena regarding faculty's attitude toward and perceived efficacy in blended course design at the UWI. While the majority of participants had received prior training in pedagogy, and their specialized content areas, they generally had received very little training in technology. Moreover, they had never received training in integrating all of the different types of knowledge (TPACK) into their blended course designs. Most of their responses in this pre-treatment survey were neutral or uncertain.

Faculty seemed to be generally unsure of what they knew or did not know as it pertained to TPACK, and by extension, their blended course designs. Some stated that they "feel comfortable" (G, November, 2018), "competent" (K, November, 2018) or considered themselves "above average" (A, November, 2018). But others admitted they felt "very inexpert […] weak" (J, November, 2018), "below where [they] should be" (I, November, 2018), "at the lower end of the continuum" (E, November, 2018) and "do not have the sufficient capability" (I, November, 2018). While the participants seemed to perceive themselves as novice to mediocre or average-level blended instructors and course designers, they all seemed to have a positive attitude to learn more and improve their skill set in blended course designs. Some participants indicated "I do not have expertise and would like to develop some" (L, November, 2018) others stated "I need to be trained" (D,

November, 2018). This indicated that there was a need for the treatment as participants generally indicated a willingness to be trained in designing blended courses.

#### 5.2.1.2 The TPACK Post-Treatment Survey

The TPACK survey was administered again as a post-treatment exercise and new data were obtained to illustrate any possible changes in faculty's attitude toward and perceived efficacy in blended course design at the UWI. The survey showed that there were no changes in faculty's perceived ability to solve their own technical problems. In the pre-treatment, 26.7% of the respondents agreed that they knew how to solve their own technical problems. In the post-treatment only 33% felt this way – less than 7% increase. However, there was a 10% improvement in their attitude or perceived ability to learn technology easily. By the end of the treatment, 66.7% of participants either agreed or strongly agreed that they can learn technology easily.

There were other substantive improvements in their TK. Half (50%) of the participants felt they were able to keep up with important technologies – compared to only 33% in the pre-treatment survey. In the initial survey, participants' responses were prevalently neutral or uncertain with a few (less than 50%) agreements regarding their perceived ability to play around with technologies, their knowledge of different technologies, their technical skills and technology use. However, in the post-treatment survey, 72.3% of the participants agreed or strongly agreed that their TK was much improved.

Participants' perceived CK also improved by the end of the treatment. This improvement was indicated as 89% of participants now strongly agreed that they had

sufficient knowledge and could use specific ways of thinking in their specialized fields or disciplines. They also strongly believed that they had various ways and strategies of developing their understanding in their specialized fields now as opposed to the pre-treatment phase. In the pre-treatment survey, an average of 35% of participants only agreed they had sufficient CK in their area of specialization, but in the post-treatment survey, an average of 42% strongly agreed that their CK was sufficient or beyond average. This is a 7% improvement regarding their attitude or confidence in their fields or CK – not only indicated in the frequency of ratings but also in the quality of ratings from "Agree" to "Strongly Agree" in the survey.

There were improvements in participants' PK. While participants' responses pertaining to their PK ranged from "Agree" to "Strongly Disagree" in the pre-treatment survey, their responses in the post-treatment survey regarding their PK ranged from "Agree" to "Strongly Agree". No participant disagreed with any of the PK rating items in the post-treatment survey. The data therefore suggested that the treatment might have improved participants' knowledge or perceived ability to assess students' performance, adapt their teaching based on students' understanding and differentiated learners, and to assess student learning in multiple ways. Moreover, the data between the pre-treatment and post-treatment surveys indicated all (100%) participants believed they can use a wider range of teaching approaches, were more familiar with students' misconceptions and expectations, and knew how to organize and maintain classroom management. This further indicated the improvement in their perceived PK that may have resulted from the treatment.

Data for participants' PCK between the pre-treatment and post-treatment surveys were similar. Most participants (75%) remained generally confident that they can select

effective teaching approaches to guide their students' thinking and learning in their specific disciplines. Participants' responses for PCK in the post-treatment and the pre-treatment surveys prevalently ranged from "Agree" to "Strongly Agree" for their respective specializations but rarely selected negative ratings in this regard. It is therefore possible that the treatment did little to improve participants' PCK. This may have been due to participants' prior training and experience in teaching their subjects or specializations. Likewise, participants' TCK generally remained the same between the pre-treatment and post-treatment surveys. This may have occurred as the treatment was designed to be more generic as opposed to specifying on blended course designs in a particular field or specialization such as literacy or social studies. As such, participants were not exposed to technology tools that were designed specifically for their specializations.

But there were improvements in their perceptions and attitudes regarding TPK. In the pre-treatment survey, several participants (30.8%) were either neutral or did not believe they could choose technologies that enhanced teaching approaches for a lesson. But in the post-treatment survey, this was reduced to 9.1%, thereby indicating a 21.7% improvement in participants' perceived ability to choose technologies that enhanced their teaching approaches. Moreover, the post-treatment survey had a 27% increase in participants stating they "Strongly Agreed" that they improved in this perceived ability (Table 5.4) – unlike the pre-treatment survey where 0% of participants "strongly agreed" (Table 5.3). Likewise, 90.9% of participants believed they experienced an improvement in their ability to choose technologies that enhanced students' learning in a lesson following the treatment - compared to 69% in the pre-treatment survey. The post-treatment survey also had more

participants (39%) stating they strongly felt this way as opposed to 23.1% in the pre-treatment survey (Table 5.4).

Table 5.4.

*Prevalent Ratings of Participants' Self-Perceived TPK Post-Treatment*

| **TPK Statements** | **Prevalent Responses** | **Number of Participants in Prevalent Response** |
|---|---|---|
| I can choose technologies that enhance the teaching process for a lesson | Agree | 7 |
| I can choose technologies that enhance students' learning for a lesson. | Agree | 6 |
| My training and experience have caused me to think more deeply about how technology could influence the teaching approaches I use in my classroom | Strongly Agree | 8 |
| I am thinking critically about how to use technology in my classroom, | Strongly Agree | 7 |
| I can adapt the use of the technologies that I am learning about to different teaching activities | Strongly Agree | 6 |
| I can select technologies to use in my classroom that enhance what I teach, how I teach and what students learn. | Strongly Agree | 6 |
| I can provide leadership in helping others to coordinate the use of content, technologies and teaching approaches in my department. | Agree | 7 |
| I can choose technologies that enhance the content for a lesson | Agree | 6 |

At first glance the relationship or correlation between participants' training and expertise and their conception of how technology can influence their teaching approaches seemed the same between the pre-treatment and the post-treatment surveys; however, closer examination revealed that this was not the case (Tables 5.3 and 5.4). In the pre-treatment survey 76.9% of the participants agreed that their training caused them to think more deeply about how technology can influence their teaching approaches (Table 5.3). Others were neutral or unsure. But in the post-treatment survey, all participants (100%)

either agreed or strongly agreed with the statement, and 72.7% of the participants felt more strongly about this impact (Table 5.4). Similar findings were obtained regarding participants' critical thinking about how to use technology in their courses. All participants felt more confident about this in the post-treatment survey than they did in the pre-treatment survey. It is therefore likely that the treatment may have caused this change in participants' TPK.

Changes in participants' TPACK also occurred. In the post-treatment survey, all participants (100%) felt more confident and knowledgeable to teach lessons that appropriately combined their specialized content with technologies and teaching approaches. While 50% of the pre-treatment survey responses ranged from "Agree" to "Strongly Disagree", 71.4% of the post-treatment survey responses generally ranged from "Neither Agree or Disagree" to "Strongly Agree" – with most responses (66.7%) being in the latter or positive end. In the open-ended TPACK questions, participants were asked to describe an instance where an exemplary combination of content, technologies and teaching approaches was demonstrated. Many participants provided instances from the treatment, for example, where the course instructor used various technologies such as synchronous virtual conferencing tools, podcasting and other web-based platforms, and a variety of teaching strategies such as modelling, collaborative, reflective and hands-on learning to teach them new concepts such as the COI and TPACK frameworks.

When participants were asked to elaborate on a more recent instance where they thought they modelled an appropriate combination of content, technologies and teaching approaches, participants described such instances they had during and/or outside of the course/treatment, for example, when they tried to implement what they were learning in

the treatment in the courses they were teaching at the time. One participant recalled using Blackboard Collaborate (BBC) for a tutorial session and used the features therein, such as the meeting or break-out rooms, and engaged students by allowing them to write on the screen. Another participant testified about an exemplary instance where he/she used a tool he/she had learned in the treatment for an online session in his/her course. One participant further stated

> "Using BBC to engage student teachers in developing lesson plans. The various features of the components of the plan were discussed. Participants in groups developed various sections of the plan. They critiqued each groups input." (M, November, 2018).

This instance indicated the use of the technology tool, teaching approaches such as collaborative learning to teach on lesson plans.

When asked to describe the expertise in blended course designs, participants were generally much more positive and expressive in their responses in the post-treatment survey. One participant stated

> I am now going to be deliberate in ensuring that the blended course design meets the needs of all learners and creates an interactive learning experience. the student must experience value both in the online environment and face to face instruction. Each session care will be taken into the appropriates of the technology to be used." (B, November, 2018).

Another participant stated that he/she felt "Better than before given the training received from the facilitator […]" (D, November, 2018). Some responses were concise such as "I feel proficient" (A, November, 2018). Others were much more detailed, thinking of the way forward such as "I think I'm more aware of the features of BBC, as well as some other fancy tools like those I was exposed to in this course, to capture and maintain my students' interest" (N, November, 2018).

Some persons indicated a desire to know more about blended course designs and required further training, stating that

> "[I'm] still uncertain about some of the technologies, but daring myself to get on board. I think that I need to have students more engaged with material and the technology in the online sessions. I have a new approach to planning and executing online sessions, that is, greater alignment among objectives, content, technology and assessment" (M, November, 2018).

But most were either reflective, stating that "I am now able to reflect on the best practice and principles of blended course design as I prepare my courses" (F, November, 2018), while others expressed improved confidence as they moved forward in their blended course designs, stating that "I believe I have a greater scope and armed with more familiarity with the principles of design I feel confident for the future" (C, November, 2018).

The pre-treatment and post-surveys identified several improvements regarding faculty's attitude toward and perceived efficacy in blended course design at the UWI. Most notably, the greatest impact occurred in participants' PK and TPK. The data acquired from the pre-treatment survey showed that prior to the program, participants generally had some negative attitudes or perceptions ranging from a lack of confidence and knowledge, to a lack of training and experience specifically in blended course designs. But the post-treatment survey illustrated several improvements in these areas. The survey was therefore instrumental in measuring the extent to which a professional learning experience based on TPACK and a COI approach improved faculty's attitude toward and perceived efficacy in blended course design at the UWI.

#### 5.2.1.3 The Paired T-Test Analysis

While the aforementioned descriptive statistics illustrated several changes in participants' knowledge following the treatment, according to the t-test, the intervention did not have a statistically significant impact or difference on participants' TPACK. A paired t-test was conducted to compare the means of the pre-treatment and post-treatment surveys and to answer the aforementioned research question. The results of the paired t-test indicated that the intervention did not have a statistically significant impact on participants' TPACK ($p$=.29) (Table 5.5). Since the $p$-value was greater than 0.05 ($p < 0.05$), the null hypothesis was rejected in favor of the alternative hypothesis which states that the treatment did not have an impact on participants' TPACK. This may have been caused by the small sample or survey response rate which is discussed in the limitations of the study.

Table 5.5

*p-values determined by t-test comparing pre-post survey responses.*

| | **TK** | **CK** | **PK** | **PCK** | **TCK** | **TPK** | **TPACK** |
|---|---|---|---|---|---|---|---|
| **TK** | 0.24 | | | | | | |
| **CK** | | 0.55 | | | | | |
| **PK** | | | 0.00* | | | | |
| **PCK** | | | | 1.00 | | | |
| **TCK** | | | | | 0.18 | | |
| **TPK** | | | | | | 0.00* | |
| **TPACK** | | | | | | | 0.29 |

**Significant at the .05 level*

However, further analyses were conducted utilizing the various constructs of TPACK (TK, CK, PK, PCK, TCK, and TPK). A series of paired t-test was conducted to compare the means of the pre-treatment and post-treatment surveys by isolating the survey data used to operationalize and measure each construct. While the p-values for the majority

of the constructs (TK, CK and PCK) were not statistically significant (Table 5.5), the p-values for PK and TPK were statistically significant ($p = 0.00$ respectively), indicating that there was an improvement or difference in participants' PK and TPK following the treatment.

The data from the paired t-tests of TPACK and its constructs reinforced the findings from the other instruments used in this research such as the focus group interviews and reflective journals. Together, the triangulation of data helped to illustrate that the most significant impact or change in the participant's knowledge occurred in their PK and TPK.

#### 5.2.1.4 The Mid-Treatment Reflective Journals

These findings were further strengthened by the journal reflections. During the treatment, participants were instructed to write reflections on their learning experiences as per various prompts. These reflections functioned as the mid-treatment phase of the research. The purpose of these prompts was to track participants' learning as they were going through the professional development experience, and thereby answer the first research question regarding any improvement in faculty's attitude toward and perceived efficacy in blended course design at the UWI. The reflective prompts were also designed to allow participants to engage in introspection and metacognition during the program as per the theoretical framework that informed the design of the treatment, and identify elements in the program that were most meaningful to them.

Participants became increasingly creative in their journal reflections, exploring different media or technology platforms to create and submit their journals. Some of the most groundbreaking reflections were in response to the prompt which stated:

> "this week, we looked at instructional design models as well as presentation media such as screencast-o-matic and flipsnack as powerful tools for teaching and learning in blended course designs. Considering the common elements of instructional design models, explain how such tools can be used in your blended course" (Appendix G).

One participant communicated that he was learning things that he had not known before, stating that "In using various presentation media, I gained a lot of insight into the benefits and challenges of using them" (A, December, 2018). He provided further details that "using these 2 media presentations demonstrated how creative one can be in the online environment in a blended course. It also showed the importance of being mindful about critical elements in your course design" (A, December, 2018). He elaborated on these points, and referred to some of the instructional design principles explored in that particular unit of the program, "firstly, the planning stage is extremely critical when using these media in a blended course. Obviously, you need to know how to use software applications. Once that is accomplished you need to know when to use them" (A, December, 2018). He further explained, "You also need to make sure the content and software are properly linked so that students can be efficiently moved through the taxonomies related to your course and lesson objectives. This means that you need to have a good understanding of the instructional context" (A, December, 2018).

After expounding on the importance of planning, content and instructional contexts, this participant continues

> "secondly, you need to give careful consideration to the materials and activities you use in the blended format. Your objectives, guided by Bloom's taxonomies, can tell you what activities and strategies might be best accomplished in either a face to face or online session. The creativity of the course facilitator in setting up the sessions will therefore be critical" (A, December, 2018).

These are additional instructional design principles that were explored in the course at that particular time. After expounding on the aforementioned principles, which are elements of the TPACK framework, namely CK, PK, and PCK, he continues to elaborate on technological concerns (TK, TCK and TPK) – "a third consideration would be selection of resource materials. You need to know what's available and know how to use them so that you can also help your students. Finally, assessment considerations would also be relevant – formative and summative" (A, December, 2018). By the end of his reflection, he expresses his desire to know more and to implement what he has learned in his own blended course design.

Another participant found that she can use technology tools to engage students and also foster greater creativity in her blended course designs. She believed that tools such as "screencast-o-matic can also be used by the students to upload assignments rather than submitting written work and therefore appeal to students who wish to explore their creativity in assignments" (I, December, 2018). Another participant was eager to implement what he had learnt into his blended course design. Referring to various aspects of his course such as the layout and organization of information he believed that screencasts can be used "firstly to orient the students to the course page, some pictorial that catches the eye and draws student interest is desirable. In this first section a screen cast can be used […]" (C, December, 2018). His reflection further showed that he was now thinking of more student-centered approaches and other ways to integrate instructional design principles and technologies into his blended course designs, "all the basic features of instructional design can be facilitated by the screen casting tool for the sessions where this is needed. The leeway given to the students as well by this tool as well as its integration with other

worthwhile online learning tools can together enhance and transform my blended course" (C, December, 2018).

Participants were given another journal prompt by the following week. During that week in the treatment, the COI and TPACK frameworks were introduced to the participants, and by the end of that week they were given the following prompt – "this week, you learned about TPACK and the COI models. Describe one thing that stood out to you in these models, and describe how they may assist you in blended course designs" (Appendix G). One respondent became candid in her response, stating that "as the course continued, I realized that my method of delivery and preparing a blended course design for my subject area are critically important to increase student motivation and also to make content more accessible to students" (D, December, 2018).

She continued to reflect on the things that stood out to her in the module and her course designs, highlighting that "the diagram and video for the TPACK model stood out. That is the overlapping centre spot (the sweet spot). They showed me how I can integrate the main elements in TPACK - Pedagogy, Technology and Content to satisfy my different style of learners" (D, December, 2018). She further connects what she learned to her teaching practice, stating that "I realized then, that part of the control is still in my hands because I know my students. So, it is critical more than ever that I must integrate those main elements to work together when I am preparing my course design" (D, December, 2018). The participant performed her own synthesis of the information presented in that course module and created some guidelines to inform her future blended course designs which included "What I want to teach (concept/skill/content). How to teach it (strategy/method –pedagogy). How to deliver (very important 'the partner for support' –

so I must appropriately select the tools/platform/software for delivery)" (D, December, 2018).

With regard to the COI, the participant expressed the things she learned from the treatment module, and created a plan for implementation. She continued, "I would use the guided reflective question […] What I want to do within in the class (ensuring that all of the three presences are integrated). Examples of some useful tools BBC and Wiki for group work" (D, December, 2018). Based on the reflection, this participant was able to use the treatment to make the connections between the COI and TPACK frameworks and her blended course designs at the UWI.

Another participant made similar connections, and was aware of her learning (metacognition) in the treatment. She reflected not just on the module at the time, but she also reflected on things leading up to the module. She stated "I am rapidly beginning to understand the use of the term 'systematic' in the title of this course, and its constant reiteration by the tutor and, now the frameworks of TRACK and COI - 'frameworks' being another way of saying that something is being organized, and made methodical" (J, December, 2018). She further expresses her metacognition and transformation, stating that, "The 'old hat' is being transformed by the inclusion of strategically chosen tools (which are seductive in themselves), but the message comes across clearly – the tools are meant to boost learning and are not just a way for me to display my 'new' expertise." (D, December, 2018).

Like many other participants in the treatment, this individual seemed to have her perceptions regarding blended course designs but was learning new things as she was exposed to the treatment and was eager to implement these in her practice. The treatment

was therefore helping participants re-conceptualize their blended course designs through the COI and TPACK frameworks.

Participants were given another prompt in a subsequent module. This prompt directly targeted their perceptions or attitude as per the research question. It required participants to "Identify one perception you had about blended course designs (or blended teaching and learning). How has this training experience helped to change that perception? How has this change in perception translated to a change in your efficacy regarding blended course designs?" (Appendix G). One participant responded to this prompt by first identifying his perception before exposure to the treatment – "One perception I had about blended teaching and learning was that this type of education would take away from the immediacy of the learning encounter and dilute the idea of persons engaging in the construction of knowledge as community. I felt that the technology would make for the learning encounter to be cold and detached and compromise the human element" (C, December, 2018). He then detailed how his exposure to the treatment helped to change this perception –

> This training experience helped to change that perception since I realized that the crux of the matter lies in the design of the blended course. The Col model in fact ensures that this community and social element is present and I have benefited from the readings reflecting experiences that others have had. (C, December, 2018).

He also found that the treatment not only changed his perceptions, but also improved his efficacy in blended course designs:

> My efficacy has improved regarding course designs. Now I am enthralled with the possibilities of incorporating various tools to enhance the learning experience […] I am all now rearing to go and feel more confident in my abilities to engage students using 21st century tools that are both attractive to them and capable of involving them in meaningful learning activities. (C, December, 2018).

Another participant responded to the same prompt, stating that she, and many of her colleagues, had "the [perception] that nothing could beat f2f and that BL was a sort of last resort, or back up for organizational mishaps" (J, December, 2018). She expressed that they used this as justification to avoid blended course designs. But by the end of her reflection, she detailed the change in her attitude or perception and her eagerness to design blended courses with her colleagues resulting from the collaborative tasks in the treatment. She articulated that "undoubtedly I am now open to trying out some of the tools in lieu of our traditional slate of written reflections and papers. I am quite eager. What helps, as always, is that I am not alone in this – my colleagues are also eager and we plan to transform the course along more BL-friendly formats" (J, December, 2018).

The reflective journals helped to answer the research question regarding the extent to which a professional learning experience based on TPACK and a COI approach can improve faculty's attitude toward and perceived efficacy in blended course design at the UWI. While the TPACK pre-treatment and post-treatment surveys provided evidence of the general impact of the treatment in this regard, the reflective journals allowed further insight. The journals provided a detailed account to the kinds of perceptions and perceived efficacies participants had upon enrolment in the treatment, and how they changed during the treatment. Moreover, the reflective journals further outlined the elements of the treatment, such as the topics or modules, the collaborative activities, the use of technologies, and the organization of the course, that led to the transformation in participants. The focus group interview provided further details and validity to these findings.

#### 5.2.1.5 The Post-Treatment Focus Group Interview

Participants were required to meet for a focus group interview following the treatment. For this post-treatment phase, an invitation was sent to all participants via email, and from their responses, a date and time were agreed upon based on a consensus. Only eight of the participants were present for the focus group interview which was recorded and transcribed for analysis. The interview comprised five main questions, with a few subsidiary ones based on participants' responses.

The first question was closely related to one of the prompts for the journal reflections during the mid-treatment phase. Having completed the program, participants were asked to explain how the training experience changed their view of blended course designs? One participant responded that "learning the principles of blending and actually putting it into practice was a very helpful thing. Because it's not just a matter of just using online tools but it's how to put it together…what to do…what ingredients to put in it so that you get the maximum out of the class […] and learning" (C, January, 2019). Another participant noted that "[the treatment] let me know how much effort [and] time is required to prepare a course for the blended format […] But it was very good in the sense that we got [a] structure to follow […] that is critical…. before whenever I did anything online for the course it was sometimes in a kind of an ad hoc […] manner…" (A, January, 2019). As seen here, the participants not only identified aspects of the course that changed their perceptions, but also how these aspects changed their practice or efficacy. They were able to detail the changes within themselves due to the curriculum in the treatment for example. This further indicates the metacognition that occurred throughout the treatment.

Prompted by a subsidiary question, this same participant explained that collaborating with his colleagues on his blended course design during the treatment was much more favorable as it was less time-consuming and burdensome. Another participant noted that designing a blended course individually required much more time and effort – "[…] about six months to do […]" (H, January, 2019). But this participant also noted that the treatment allowed her to take a more student-centered or "student-friendly" (H, January, 2019) approach to her blended course designs instead of the teacher-centered approach she normally used. Another participant chimed in agreement, stating that "[…] my biggest downfall was [a] lack of organization […] students said they love my course because everything is there […] but I just dropped things in there and then when I saw your [course] site […] where everything was systematic, very organized so that people […] don't have to swim through the thing …] the students said I was distressing them, so now I am more conscious to have things organized" (F, January, 2019). Other participants also agreed with this change in their perception regarding the adoption of a more student-centered approach, the organization of their blended course site and student engagement. Based on their responses, it is possible that the participants were able to independently correlate the treatment with their changed views and perceived efficacy in blended course designs.

When asked whether they feel more confident in designing a blended course, and what about this program may have contributed to this, participants responded positively, referring to various elements of the treatment. One participant felt that now he was more doubtful correlating this to the gradual erosion of his previous perceptions before exposure to the treatment. He detailed that "[…] second guessing myself now because I guess before I thought I knew and now I keep wondering […] is it appropriate…even with that

[instructional matrix activity]. I was hesitating to do that [instructional matrix activity] but when I sat down and just got it done, I said "oh my goodness you took so long to do this thing?" […] but it's just a matter of doing it" (F, January, 2019). Another participant also found that the experiential learning in the treatment helped to build his confidence and improve his skill set, stating that "the experiential learning in doing it […] was really, really meaningful for me […] because it developed my IT skills…I feel fairly confident" (A, January, 2019). While these participants emphasized the experiential learning activities in the treatment as key to building their confidence, others found that the collaborative learning aspects helped in this regard.

Referring to the instances of collaborative learning in the treatment one participant noted that "I do feel more confident […] The fact that most of us [in our Social Studies group] did this thing, I feel more confident […] if you know there's a team and you know you can just Whatsapp you might get through that thing in one second […] I feel that doing it in the group there has sort of laid a foundation for what we can do better in the future" (C, January, 2019). Another participant expressed similar sentiments relating to her collaborative experience in the treatment and her improved confidence, stating that "everybody just synced naturally […] Even the conversation we were having in terms of what to do, what not to do. Everybody just worked together" (B, January, 2019). Participants also found the authentic learning and competency-based approaches used in the treatment were integral to their changed perceptions and improved confidence.

Regarding the instructional design and activities in the treatment, one person expressed that "introducing the new tools, you gave us assignments and incorporated our learning of the tools with our assignments…so you were doing two things at the same time.

We were learning about a particular content but we were getting a chance to take that content and express our understanding through the new tools" (F, January, 2019). He also found the hands-on approach to be integral in his development – "having us introduced to the new tools did not make the assignments loaded. They were simple tasks which I found was a failure in my previous instances like when I did virtual learning trips with [my] students" (F, January, 2019). The data therefore showed that various elements of the treatment such as the collaborative and experiential learning activities improved their confidence in blended course designs.

Participants were then asked to elaborate on the extent the TPACK and COI models enhanced their ability to design a blended course. Most participants stated that they now use it as a guide to inform everything they do in their blended course designs. One participant found that "When you're putting things on, and even when you're reviewing what you have, if you could just go back and use [it] as a kind of checklist "do I have this?" "Do I have that?" I think that that helps" (C, January, 2019). Another participant expressed "I had done two courses on blended learning. But I had never been introduced to COI and TPACK […] so in my mind now, I'm looking for that alignment [in my blended course designs]" (F, January, 2019).

Participants also commented on an activity in the treatment where they were required to critique a blended course design based on the COI framework and the OSCQR criteria. Reflecting on this exercise, one person stated "that helped us understand what to do and what not to do. So I think that impacted on the design in the subsequent exercise where you had that table [the instructional sequence/matrix] you used the TPACK or the COI […] it really helped us to say "oh, this is what that person could have done" […] we

saw the application of that model […]" (I, January, 2019). Sharing the same sentiments, another participant admitted that "it kind of made us reflect on what we do in our courses…and it kind of showed us that we have some issues or some problems with how our courses are designed. In being critical of that course [applying the model], we were being critical of ourselves" (A, January, 2019).

Others expressed that the models enhanced their ability to design blended courses that were more student-centered. One person expressed that "[the models and the activities] forced us […] to put yourself in the shoes of the student […] sometimes even with the instructions, sometimes where you place…locate certain things whether it's an assignment or whatever, when you look at it in the context of the flow of the course, you could see how it could confuse students […]" (E, January, 2019). The TPACK and COI models, merged with other aspects of the treatment such as the learning activities, were therefore integral in participants' improved perceptions and efficacy in blended course designs.

Participants were asked to outline their systematic approach to blended course designs. They responded by identifying a process that aligned with both the TPACK and COI frameworks. One person stated "[…] get the content. Identify how you're going to teach the different content with the activities and what tools you will need and then I would start to build my course" (H, January, 2019). Other persons outlined a different approach such as a backward design approach starting with the objectives, selecting the content, the activities and designing it in the online environment. For one participant, "it started with that end-point in mind because the very content that you select, the activities you get them engaged in will all contribute toward that end-point" (E, January, 2019). She further justified her approach, and more so the reason for starting with the end in mind (the

backward approach), stating that "I think [having the end-point] becomes important because sometimes you could pack a course with so much that sometimes you have to wonder…it might be relevant and related but is it necessary for what you want the student to learn […] starting with that end-point will inform [everything else in the process]" (E, January, 2019). Despite having different systematic approaches, all participants grounded their blended course design processes in the TPACK and COI frameworks. The liked that the models did not have them "stuck in a linear mode" but allowed them to be flexible in the procedure while still maintaining the structure and organization or systematic flow that the models require.

One of the final questions asked of the participants required them to identify at least three things they were able to do as a result of the treatment. This question was aimed at verifying the impact of the treatment on participants' attitudes and perceived efficacy in blended course designs. Participants responded by identifying the technology tools they can now use following the treatment, these included social media and mobile technologies such as Snapchat, FlipSnack, and Screencast-o-matic. One participant expressed that "I was not too familiar with the conduct of synchronous learning like with Blackboard [Collaborate] and all the tools that were available and the chats and bringing in resources […] I set up some virtual sessions already" (I, January, 2019).

Another participant noted that she did not know how to integrate technology tools into the campus' LMS for student engagement but by the end of the treatment, she was able to complete such tasks. She recalls "putting it in [the LMS] was a new experience for me […] I didn't know how to embed it […] to make your page look really attractive […] and really engaging […] when you look at [the course site] now, it attracts you to it" (B,

January, 2019). More than exploring different technology tools and redesigning her course site, this participant along with several others also found that the instructional matrix activity improved their approach to blended course design, which led to a more organized, and engaging course. She continued to detail that "the matrix [instructional sequence] and then being very deliberate with the theory…looking at the presence, the social presence, the cognitive presence […] you're making it more deliberate" (B, January, 2019). Other participants expressed that they have redesigned some of their course assessments so that they become more hands-on and students can be more engaged.

In addition to the aforementioned activities and content, all of the participants strongly agreed that the one-on-one clinics (tutorials) incorporated in the treatment were integral to their improved skill set knowledge and attitudes – "the clinics were very very helpful to me" (E, January, 2019). Many of them felt that the clinics provided individual attention to meet their individual learning needs. They also found the clinics to be more convenient to their busy schedules, and was a source of encouragement to keep them on track with the various activities in the treatment. They also expressed gratitude for doing the course, given their changed attitudes and perceived efficacy.

While the TPACK survey provided quantitative data regarding faculty's attitudes and perceived efficacy in blended course designs before and after the treatment, the journal reflections and the focus group interview provided qualitative data. Moreover, the data acquired via each instrument gave substantive insight to participants' learning experience, their change (impact of the treatment) and the specific elements of the treatment that led to those changes. According to the data, participants believed they were more knowledgeable and skilled in blended course designs as indicated by their technology-use, and their ability

to plan a course by creating an instructional sequence, describe the features of the COI and TPACK, and identify exemplary aspects of a blended course design. The data also illustrated that the collaborative, and experiential learning activities, the instructional design of the treatment, the reflective and modelling strategies, and the clinics were the most instrumental elements in the treatment that caused the change in participants.

### 5.2.2 Research Question 2. How can a professional learning experience based on TPACK and a COI approach increase course quality as aligned with the OSCQR rubric and COI design?

While the first research question focused on participants' attitudes and perceived efficacy, the second research question focuses on their actual practice in blended course designs aligned with the OSCQR rubric and COI framework. The second question may also help to verify and/or establish a possible correlation between participants' perceptions (attitudes) and practice (efficacy). Five courses were randomly chosen for this procedure. These courses were evaluated according to the OSCQR which had established criteria or constructs as seen in Table 4.1. The COI represented a process of creating a deep and meaningful (collaborative-constructivist) learning experience via three interdependent elements – SP, CP and TP (Garrison et al, 2000) (Appendix K). These helped to create a blended environment that allows "greater cohesion which supports increased collaboration […] enhancing metacognitive awareness and ability to learn" (Garrision, 2017, p.106).

The OSCQR evaluated the blended/online courses based on six elements –CI, CT, DL, CA, I and AF (Appendix I). Informed by the COI and other online/blended learning frameworks, the instrument was designed to support continuous improvements to the quality and accessibility of online/blended courses. The OSCQR instrument was used to

evaluate the elements of the COI and other elements such as CI (Course overview and Information) and DL (Design and Layout). The evaluations were done during the pre-treatment and post-treatment phases. The courses that were randomly chosen for evaluation were from various subsidiary fields in the SOE, ranging from 'Teaching Geography Skills' and 'Teaching of English' to 'Education and The Development of Social Competencies' and 'Developing Literacy Abilities'.

#### 5.2.2.1 The Pre-Treatment OSCQR Evaluations

The first category in the OSCQR rubric was CI (course overview and information). This section looked at specific features in the course designs such as the presence of welcome and orientation content, course outlines, course descriptions and contact information. According to the findings, this element was either absent or minimal in participants' pre-treatment blended course designs. Only 2 (40%) out of the 5 courses had sufficiently present welcome and orientation content. Another 40% had no welcome and orientation content, and only one course had this feature but needed moderate revisions. Other CI features were also absent from the majority of course designs, and in the few instances where they may have been present, they needed substantive improvement or revision. For example, most courses did not have an apparent course outline or syllabus available on the site for students, and also lacked a course overview and the instructor's contact information. Aligning this to the COI framework, the absence of these features indicated a compromise in teaching presence (TP). There was no information to identify course instructors' identity in 80% of the pre-treatment course designs.

The second element in the OSCQR rubric was course technology and tools (CT), which referred to the integration of ICTs in the blended course designs. It encompassed the

accessibility of technology tools used and the communication of the required technical skills for students' participation in the courses. According to the findings, the majority of the courses did not have any components of CT, and thereby indicated another weakness in faculty's blended course designs. This phenomenon seemed to correlate with the findings from the TPACK survey where faculty had several deficiencies in TK, TPK, TCK and TPACK. Additionally, the absence of CT in participants' pre-treatment courses may have compromised the teaching presence (TP), social presence (SP) and cognitive presence (CP) as per the COI framework.

OSCQR rubric had course design and layout (CL) as its third component. CL encompassed issues of navigation and organization in the blended courses as well as the quality of the media graphics used. Most of the pre-treatment courses had a design and layout that needed moderate to minor revisions. Three (60%) of the five courses reviewed had enough contrast between the text and background of the course site for content to be easily viewed. Flashing text was avoided and the font size, style and color enhanced readability, but these still needed some improvement in terms of the layout of the information into a design that is less cluttered and confusing. In cases where slideshows were used, these were found to be sufficiently present as they were simple with non-automatic transitions between slides, and thereby aided readability. However, some courses failed to have any of aforementioned standards regarding design and layout prior to the treatment. These courses needed major revision in terms of CI.

The OSCQR instrument also assessed the content and activities (CA) in the pre-treatment courses. According to the findings, while some courses had substantive, and in some cases excessive content, others had minimal or no content and/or activities. The

courses with content and activities were found to be relatively engaging and potentially useful in developing students' higher order thinking and problem-solving skills such as critical reflection and analysis. These courses may have had some success in establishing teaching presence, social presence and cognitive presence in the COI framework. But the courses that lacked any substantive content or activities were deemed as ineffective for student engagement and learning in the blended/online environment. Using the findings of the OSCQR instrument and the COI framework, it appeared that the absence of CA therefore compromised the TP, CP and SP of the pre-treatment courses.

In terms of interaction (I) the OSCQR pre-treatment evaluation indicated that all the courses generally needed major to moderate revisions. Courses that lacked content and activities were also weak in this area. Other courses that had content and activities still needed some fundamental improvements as they also lacked avenues to build a sense of class community and open communication. None of the courses provided avenues for students to collaborate with each other or share content. Introductory discussions were absent in all pre-treatment courses, and there were no opportunities for students to interact with the course instructor. From the COI framework, this indicated an additional compromise in TP, SP and CP.

With regard to assessment and feedback (AF), the OSCQR indicated that courses needed fundamental revisions or improvement. Opportunities for student feedback, as well as the methods and criteria for assessment were either not clear or not evident to the reviewers. Only two (40%) of the five courses communicated the course grading policies and had frequent and appropriate methods to assess students' mastery of content, but these

still needed major improvements. Most courses needed fundamental improvement in these areas, and therefore did not indicate a strong TP, SP and CP.

The findings of the pre-treatment course review illuminated several weaknesses in participants' blended course designs. The findings indicated that participants' courses designs needed improvement in all aspects of the OSCQR model, but particularly in the areas of course technology and tools (CT), interaction (I), assessment and feedback (AF). The weaknesses in these areas also indicated several weaknesses in terms of the teaching presence (TP), social presence (SP) and cognitive presence (CP) in these courses as per the COI framework. An improvement in participants' blended course designs based on the constructs of the COI framework will also satisfy the components of the OSCQR rubric. It was also noted that the findings from the pre-treatment course reviews seemed to be correlated with the findings from the TPACK pre-treatment survey. In the survey, participants were very confident in their perceived PK and CK, but were not as confident in their TK, TCK, TPK and TPACK. In the course reviews, participants course designs generally indicated sufficient content but weaknesses in technology-mediated elements if their courses such as CT, I and AF. This phenomenon indicated a possible relationship between participants' attitude and perceptions and their efficacy in blended course designs.

#### 5.2.2.2 The Post-Treatment OSCQR Evaluations

Following the program, the aforementioned courses were reviewed using the same instrument. According to the findings, there were course design improvements in all components of the OSCQR, and by extension in the COI. While the pre-treatment evaluations indicated that faculty's course designs lacked several key elements and needed

major revisions or improvements, the post-treatment evaluation indicated that various course design components were either sufficiently present or needed very minor revisions.

According to the OSCQR evaluation findings, all courses had improvements regarding course overview and information (CI). Participants' blended course designs included a course welcome, overview and orientation content which were sufficiently present. In addition to discernable course outlines or syllabi, the courses all contained the instructor's contact information. The findings indicated 3 out of the 5 courses selected had these features sufficiently developed. This was different from the pre-treatment where CI was either absent or needed fundamental improvements. In the post-treatment course designs participants used a range of technology tools to introduce themselves to their students via screencasts and animated presentations for example. They also used these platforms to provide an overview to their courses, and prompted students to use similar platforms or technology tools to introduce themselves. The occurrence of this was absent in the course designs prior to participants' exposure to the treatment. The inclusion of these features also indicated the development of teacher presence (TP) as per the COI framework.

The post-treatment course evaluations also indicated an improvement in the use or integration of technology tools (CT) in participants' blended course designs. Most courses only needed moderate to minor revisions in this regard. But perhaps the greatest improvement occurred in courses that were empty or lacked any technology integration prior to the treatment, included technology tools that were easily accessible and appropriately used in the course by the end of the treatment.

There was also improvement in the design and layout (DI) of participants' courses following the treatment. The findings indicated that in 3 (60%) of the 5 courses the DI was sufficiently present – the highest rating in the instrument. The other two courses only needed minor revisions in this regard. This is a stark improvement from the pre-treatment evaluations where all courses needed major to moderate revisions in their DI. According to the data, the post-treatment courses provided instructions that were well-written, were free of grammatical errors, and had exemplary graphics and media to enhance readability and navigation. The layout was also found to be more logical, consistent and uncluttered compared to the pre-treatment course designs. In some of the pre-treatment courses, reading material was placed on the course homepage and this caused clutter and confusion. But participants addressed this in their new course designs by using folders, labels and webpages. This improvement is integral as it indicates an improvement in the cognitive presence (CP) in participants' courses.

Course content and activities (CA) were also much improved in the post-treatment course designs. At first glance, this change may seem minimal but closer examination revealed that the number and quality of the ratings in CA was better than the ratings in the pre-treatment evaluations. Over 60% of the courses had CAs that were given the highest ratings in the instrument – "sufficiently present". Furthermore, the specific areas of CA improvement were in the increased and improved use of Open Educational Resources (OERs) which were appropriately integrated in the course designs. Content was also made available in a variety of formats that were more accessible to students. Course activities also emulated real-world applications of the discipline. One course for example, updated a traditional coursework essay assignment into a real-life project which instructed students

to go on a field trip to study a particular geographical feature and use a particular software to create and post a report of their trip on YouTube (online), and comment on other students' screencast presentations. This was found to be potentially more engaging and relevant to students and provided a real-life application of the course content compared to her pre-treatment course design. The improvement in DL and CA in this regard strongly indicated the improvement of CP, TP and SP as per the COI framework.

The post-treatment course evaluations indicated some improvement regarding interactions (I) in participants' designs. Some participants created avenues for student collaboration in their course designs. These ranged from introductory discussion forums, to collaborative assignments and peer assessment activities. The data from the post-treatment evaluation indicated that these were sufficiently present and appropriate. Other courses generally required minor to moderate revisions regarding course interaction in the post-treatment evaluation. Even the courses that were empty in the pre-treatment indicated an improvement regarding course interaction. Using the COI framework, the improvement in this regard also indicated an improvement in social presence (SP) as well as improvements in the TP and CP or participants' post-treatment course designs.

The assessment and feedback (AF) in participants' post-treatment course designs were either sufficiently present or needed very minor changes. This is an improvement from the pre-treatment evaluations where major to moderate revisions were needed. According to the data, participants' newly designed courses included frequent and appropriate methods to assess students' mastery of content, and sufficiently detailed course grading policies, including consequences of late submissions, which were clearly stated in the course syllabi or in the assignment instructions. These were found to be sufficiently

present in the post-treatment courses. In very few instances, moderate to minor adjustments were needed such as the inclusion of clearer rubrics and platforms for more two-way feedback or feedback from students. For example, only 2 (40%) of the 5 courses reviewed required moderate revisions regarding the provision of opportunities for students to review their performance and assess their own learning throughout the course via pre-tests, automated self-tests, and reflective assignments. In the majority of courses (60%) where this was present, it was deemed either sufficiently present or needed very minor adjustments. Nevertheless, it was an improvement from the AF in the pre-treatment courses where the majority (60%) needed developments in this area, and therefore did not indicate a strong TP, SP and CP.

Data from the post-treatment course evaluations indicated an improvement in participants' blended course designs. In the pre-treatment course evaluations, the majority of courses needed substantive improvements particularly in the areas of technology and tools (CT), interaction (I), assessment and feedback (AF). But in the post-treatment course evaluations, there were improvements in all domains or course elements. In addition to technology and tools (CT), interaction (I), assessment and feedback (AF), the post-treatment course reviews indicated some of the most substantive improvements in other areas such as CI. The improvement of these courses in all of the domains or elements in the OSCQR rubric also indicated improvements in the TP (Teaching Presence), SP (Social Presence) and CP (Cognitive Presence) as per the COI framework. It therefore indicated that faculty were able to produce better blended course designs following the treatment. It was noted however, there were still areas for course design improvement even at the post-treatment stage, as the findings indicated that some minor adjustments or revisions were

still needed. Moreover, it seemed that faculty's improved course designs (efficacy) may be correlated with their improved knowledge and perceptions as per the TPACK and OSCQR instruments.

## 5.3 Discussion

The research findings indicated that the treatment may have caused changes in participants' attitudes and efficacy in blended course designs. Moreover, the findings shed light on the kinds of changes that occurred in participants and the specific aspects of the treatment that caused those changes. The data showed that participants were much more aware of the researched frameworks (COI and TPACK), and the tenets of a systematic approach to exemplary blended course designs. In addition to becoming more critical and deliberate, they have also become more confident and competent in their designs. According to the data these changes are correlated with the collaborative, hands-on, reflective and experiential activities, differentiated teaching approaches such as modelling, the course content and clinics.

### 5.3.1 Perceptions and Attitudes to Blended Course Designs

Along with the journals and focus group, the first research question used the TPACK survey and the constructs therein to indicate any issues and/or improvements regarding faculty's attitude toward and perceived efficacy in blended course design at the UWI. Statistically, the t-test illustrated that there was no significant impact on participants' TPACK and suggested a rejection of the null hypothesis. But further analysis revealed that the treatment did impact components of participants' TPACK. The constructs of the TPACK framework (TK, PK, CK, TCK, TPK, PCK and TPACK) were used to provide further detail (Table 4.1, Table 5.5). Among these constructs, the data showed that

participants had the most prevalent deficiencies in their TPK, TCK and TPACK prior to the treatment. But by the end of the treatment, these problems were addressed as participants were not only more confident but more knowledgeable in using a systematic approach to blended course designs. The greatest areas of improvement were in their TPK, TCK and TPACK (Tables 5.3 and 5.4). Not only was this indicated in the post-treatment survey, but also in the journals and focus group interview where each participant elaborated on the process or steps that comprise his/her systematic approach. The data from the paired t-tests of TPACK and its constructs reinforced the findings from the other instruments used in this research such as the focus group interviews and reflective journals. Together, the triangulation of data illustrated the TPACK areas or components where the most significant impact or change occurred in the participants.

### 5.3.2 Efficacy in Blended Course Designs

But this research was multidimensional. More than improving faculty perceptions, the research aimed at improving faculty's efficacy in blended course designs. This was the focus of the second research question, and the constructs of the COI framework (TP, CP and SP) and the OSCQR model (CI, CT, DL, CA, I and AF) were used (Table 4.1). The data from the OSCQR course reviews confirmed that faculty were able to produce better blended course designs following the treatment. By adhering to the components of the OSCQR, these new course designs aligned with and more effectively satisfied the COI framework.

Prior to the treatment, participants appeared to have a more arbitrary approach to their blended course designs. The data from the pre-treatment course reviews seemed to indicate this, as participants' course designs needed revisions as they lacked several key

elements such as interaction, user-friendly design and layout and appropriate technology integration and other elements of the OSCQR model and COI framework. More specifically, the data indicated participants needed improvement in the CI, DL, I and AF of their blended course designs and as a result, the TP, CP and SP in their courses were severely compromised. Following the treatment however, participants' course designs had a notable improvement in several areas, including their course content and activities. Though not perfect, faculty's blended course designs were still fundamentally improved following the treatment as they adopted a more systematic approach or design process, and adhered to the COI framework.

### 5.3.3 The Professional Development Experience (The Intervention)

According to the data, clinics and collaborations were some of the most influential features of the treatment that caused changes in the participants' perceptions and efficacy. Participants were allowed to request clinics for any additional help or individual or remedial attention they needed. A clinic was a one-hour, one-on-one or group session between a participant or a group of participants and the course instructor. A form was created for participants to request virtual or face-to-face clinics at any time during the treatment. A total of 16 clinic requests and/or sessions were done, 50% of these were virtual clinics during which participants required assistance in completing various activities or tasks in the treatment, exploring different technology tools such as animation platforms, and integrating these tools in their courses. The impact of the clinics was further indicated in the focus group interview where participants – "the clinics were very very helpful to me" (E, January, 2019).

The collaborations that occurred throughout the treatment were also identified by participants as integral to their change in attitude and efficacy. A group of participants decided to work together on the same course that they co-teach. These participants were able to complete all of the activities in the treatment, but moreover, their course had some of the greatest improvements in all areas of the COI and OSCQR rubric. According to the data from the focus group, these participants found the collaborative approach along with the clinics were integral in their systematic course design, and their completion of the treatment. One participants stated, "I do feel more confident […] The fact that most of us [in our Social Studies group] did this thing, I feel more confident […] if you know there's a team and you know you can just WhatsApp you might get through that thing in one second […] I feel that doing it in the group there has sort of laid a foundation for what we can do better in the future" (C, January, 2019)

The goal of this research was to build efficacy and improve faculty attitudes to blended course designs. While improvements were found in faculty's perceptions and efficacy separately, closer analysis of the findings revealed that strong correlations exist between the two. Similar to the research literature, the findings seem to suggest that the improvements in faculty's attitudes and perceptions positively affected their blended course designs. The professional development experience, and the activities and frameworks therein, was therefore the medium through which this correlational change occurred.

### 5.3.4 The Implications of Transformational Leadership on the Research

Adopting transformational leadership practices was integral to this research. As mentioned in Chapter 3, it was important that the university campus stakeholders were

engaged, and that the intervention was proposed as aligning with the institution's strategic plans and blended learning policy. Not only did this allow for buy-in from stakeholders such as administrators and managers regarding the implementation of the intervention in this research context, but it also allowed for support for future research and professional development endeavors. For example, the success of the treatment has led the Head of the School of Education to request a repeat of the program. The Government of the Republic of Trinidad and Tobago has mandated the UWI's School of Education to offer one of its programs to all teachers in the country via a blended/online approach. As such, the Head of the School of Education has requested the treatment be repeated in 2018 as faculty prepare to redesign their courses for blended delivery so they can meet the mandate given by the government.

## 5.4 Limitations

There are three primary limitations to this research. The timing and requirements of the treatment, and the small sample size may have been the reason some participants became inconsistent in and/or did not complete the treatment (Section 5.3.1). The response to the invitation to participate was lower than expected. As a result, anyone who indicated an interest to participate, by signing the consent form and completing the TPACK survey, was accepted. Although a maximum of 25 participants were catered for, the study began with only 14 participants based on the signed and returned consent forms and completed TPACK pre-treatment survey, but only 7 (50%) fully completed the treatment by completing both the pre-treatment and post-treatment surveys and having newly designed blended courses based on TPACK and COI frameworks.

Approximately 36% of participants were inconsistent in their commitment to the treatment. These persons did not complete all the activities in the treatment. Moreover, they did not complete and/or attempt the most fundamental activity where they were required to design a blended course based on TPACK and the COI. This activity occurred near the end of the treatment, by which time these particular participants became less responsive to emails and invitations, and less actively involved in the treatment. These persons subsequently indicated via email the reasons for their inability to complete the treatment. Their involvement in ad hoc job-related projects prevented them from fully completing the treatment. Had the treatment occurred and/or ended earlier, or was less demanding, these participants may have been able to complete the program. Therefore, the timing and demands of the treatment became too challenging for some participants, and limitations to the research.

In addition to participants who started but were unable to complete the treatment, some participants signed and submitted the consent form but were unable to attempt anything in the treatment. These persons did not attend any of the face-to-face and virtual sessions and did not complete various activities in the treatment. These participants also sent emails indicating their inability to complete the program due to their busy schedules or job requirements. Others had personal matters such as prescheduled travels in other countries and could not commit to the treatment. The majority of participants in the treatment had dynamic jobs that required them to be in various remote locations throughout the country everyday while also marking end-of-semester examination scripts, and conducting their own research. The treatment therefore became an additional burden for some participants whose lack of time severely restricted their involvement. It is likely that

the rate of completion was 35.7% due to the timing, and requirements of the treatment, and some participants' lack of time.

Additionally, the treatment occurred during various events and public holidays which interrupted and/or further delayed the research. From the pre-treatment to the post-treatment, global holidays and/or events such as Christmas Day, Boxing Day and New years' Day occurred. In Trinidad and Tobago in particular, many public school institutions are closed for several weeks in observance of these successive holidays. As a result, many deadlines and/or events in the treatment had to be rescheduled or delayed. For example, the post-treatment focus group interview was postponed several times as most participants were on vacation, and several departments throughout the university were closed from middle December 2018, through the middle of January 2019. As a result, many participants became even more un-responsive following these disruptions.

Another limitation is the sample size. The sample size used in this research was 14 – less than 30% of faculty at the SOE and only 7 persons were able to fully complete the treatment. This small sample was not initially planned, but may have been another result of the timing, and requirements of the treatment. The small sample size may have affected the results of the paired t-test. For example, many of the findings in the t-test were not statistically significant and this could have been caused by the small sample. The small sample not only affected the outcome or findings of the research, but it also affected its representativeness prevented generalizations from the study. Nevertheless, the findings of the research from the combination of instruments illustrated the impact of the treatment was still substantive, that those who participated indicated observable changes in their perceptions and efficacy in blended course designs.

Additionally, the non-experimental design may have been a weakness in this study. With the non-experimental design, only one group was used. There were no other controlled groups or manipulated variables, such as another group without exposure to the treatment. Outcomes were only tracked for the one group/sample used in this research. The non-experimental design used in this research did not allow for insightful comparisons to be made with another group for example. As a result, more in-depth data could not be obtained, and inferences regarding the impact of the treatment itself, for example, could not be made. An experimental design may provide more in-depth data for future research.

## 5.5 Recommendations for Future Research and Practice

Should the study be repeated, it is recommended that a larger sample size and an experimental design is used. A larger sample size would allow for a better estimation of phenomena in the study, such as faculty's improvement in perceptions and efficacy following the treatment. It may also help to identify any possible outliers, such as participants whose perceptions or efficacies did not change following exposure to the treatment, for further or more in-depth research. A larger sample would have also allowed for randomization which may have helped to reduce any possible biases in the study.

A larger sample may be more easily acquired through convenient or accidental sampling (Alvi, 2016). Convenient sampling occurs when the timing of the treatment or field work matches the availability and convenience of the target population (Alvi, 2016). For future research, it is highly recommended that a larger sample be acquired by adjusting the timing or scheduling of the treatment to a period when faculty have significantly less teaching or workload, and may be more available to commit to the treatment – for example, during the June/July period. Additionally, job-provisions can be made for them to complete

the treatment. Examples of such provisions include reduced workload or time off for the duration of the treatment. This would mitigate the limitation in the previous section regarding the unavailability of participants due to scheduling the treatment at a time that clashed with their other job duties such as marking examination papers, submitting end-of-term reports, and resolving other job-related projects.

The duration of the treatment may need to be revised as it seemed too long for some participants and too short for others. Perhaps an on-going, bi-weekly training program may be more sufficient. This can be self-paced, for example, with some facilitation for the duration of a semester (Bautista, 2015). Additionally, some participants decided to work together on a course they were co-teaching instead of working individually to design their separate courses. The data from the focus group and the journal reflections indicated a preference for this approach. Moreover, participants were more successful in completing the various tasks in the treatment by working together. Many participants who worked separately were not as successful or exemplary in many tasks, or did not complete the course.

Additionally, an experimental design should be used for future iterations. This may be done by having two control groups, for example, where on group is exposed to the treatment and the other is not. An experimental design will allow outcomes to be tracked for two groups for example, instead of just one. Such a design would help to produce more insightful data from which more complex analyses could be performed and more revealing and valuable conclusions could be drawn. Stronger correlations and causations could be found if an experimental design were used.

Nevertheless, the investigation provided evidence that the problem regarding faculty's arbitrary approach to blended course designs at the UWI can be mitigated. Implementing a treatment or professional development experience that is blended, addresses the general and individual needs of the participants, exhibits exemplary practices in blended course designs, and engages participants through collaborative, experiential and reflective learning activities, will impact participants to adopt a more systematic approach to blended course designs. As previously mentioned, the success of the treatment has also led the Head of the School of Education to request that the treatment be repeated in 2018 as faculty prepare to redesign their courses for blended delivery so they can meet a mandate given by the government of the Republic of Trinidad and Tobago to train educators throughout the country. This may provide an avenue for furture research where the aforementioned recommendations can be implemented.

## 5.6 Conclusions

This research examined the experiences of 14 faculty at the UWI's School of Education who participated in a professional development experience. While some participants did not complete the program, those who did indicated substantive changes in their perceptions and efficacy regarding blended course designs. The mixed methods approach provided insight to the nature of these changes caused by the treatment. The pre-treatment survey along with the OSCQR course review indicated participants' lack of knowledge, confidence and expertise in blended course designs. More specifically, the TPACK identified weaknesses regarding participants' TPK, TPK and TPACK. These weaknesses in participants' attitudes and perceived efficacy seemed to affect participants' blended course designs as per the results from the OSCQR.

The mid-treatment journal reflections indicated the changes that were occurring in participants as they were gradually being exposed to the treatment. These changes occurred primarily in their attitudes, knowledge and perceived efficacy. Indicators of these changes were also present in participants' completed activities and the original learning artefacts they produced during the course of the treatment. The post-treatment course reviews and focus group interview indicated the most fundamental changes in faculty as they were able to design a blended course based on the TPACK and COI frameworks and the OSCQR model, and describe the systematic approach they adopted to design these courses.

Based on the aforementioned data or changes in participants, one can therefore conclude that faculty's perceptions and efficacy regarding blended course designs are inextricably linked. Prior to the treatment, participants had severely compromised blended course designs which correlated with their misconceptions and perceived efficacy. By the end of the treatment, there were changes their knowledge and perceptions, and their efficacy in blended course designs was substantively improved. As indicated in the research study and literature, their exposure to an ongoing professional development experience, and the TPACK and COI frameworks therein, has prominently contributed to this change.

# 6 Appendices

Appendix A

## Intervention Design and Procedure

### The proposed intervention

To mitigate the problem of practice (POP) regarding faculty's arbitrary approach to blended course design at the UWI, as well as the underlying factors such as faculty inefficacy and negative perceptions, a blended professional development training program is being proposed. This training program will orient faculty on the campus's policy for blended learning and provide training in using instructional design principles for blended course design. In keeping with the data from the needs assessment, this professional development/training course will be an on-going faculty course from which trainees receive a certificate upon completion.

This blended program is six weeks in duration for a total of 18 contact hours with participants both online and face-to-face. The intervention should begin by the middle of June 2018 and end by early July 2018. The face-to-face sessions will occur on the campus while the online components of the intervention will take place primarily on the campus' LMS (MOODLE) and web-conferencing platform (Blackboard). Faculty currently have access to this platform, but not all of them make use of it. As such, using this LMS to deliver the training course/intervention and use it as the platform on which faculty will design their blended courses during the intervention, will further encourage them to make use of it during and after the intervention.

This decision was made to enroll faculty from the campus' School of Education because it already has some structures for professional development initiatives which

they implement every semester for their faculty. Should the program be successful, it would allow the School of Education to be the lead in making the thrust for blended learning more successful across the campus – since blended instruction is within the field of education. According to transformational leadership theories, doing this can help motivate other faculty and departments to do the same.

**The Instructional Sequence**

Based on the research goal and questions, the intervention program (that is, the blended professional development/training course) is guided by several learning objectives, topics/modules and frameworks. For each week of the course, participants will be exposed to new/different modules, topics and activities that will ultimately guide them as they develop/design their blended courses. To this end, the program will orient participants to the campus' policy for blended learning which is part of the UWI's strategic plan, as well as the campus' LMS, and it will subsequently seek to get them familiarized with instructional design principles, TPACK and the COI which they will incorporate as they design their blended courses. The diagram below illustrates the instructional sequence of the proposed training course. It outlines the topics that are aligned with each course objective, and the elements of the TPACK and COI frameworks that are in effect to model what participants are required to do by the end of the intervention.

*Instructional Sequence of the Professional Development/Training Course.*

| **Objectives** | **Instructional Sequence** | **Elements of TPACK & COI Frameworks** | **Instructional Activities/Strategies** |
|---|---|---|---|
| Identify the components of the policy for blended learning at the UWI | The UWI's Strategic Plan<br><br>Teaching & Learning at the UWI | Institutional Context, TPACK & COI Overview/Introduction | **Collaborative, Reflective and Inquiry-based Learning, Authentic Learning**<br><br>Details: Online discussion forum - Introductions, and description of problems with blended learning at the UWI/campus.<br>Reflective Journal Prompt |
| Outline the basic elements of a blended course | The Role of Technology on T&L<br><br>Blended vs F2F vs Online Learning<br><br>The UWI's Learning Management System | Technological Knowledge | **Collaborative, Reflective, Project-based Learning, Modelling, Authentic Learning**<br><br>Details: Use the readings, tech-tools, and a sample/model-blended course in the LMS to create a modern report illustrating the different components (strengths and weaknesses) of a blended course design. |
| Compare Various ID Models/Principles for blended course delivery | Understanding Your Instructional Context<br><br>An Overview of ID Models & Principles | Pedagogical Knowledge<br><br>Technological Pedagogical Knowledge | **Reflective, Collaborative and PBL**<br><br>Details: (Online group presentations and discussion on 3 primary instructional design models (ADDIE, Kemp, Dick and Carey, Smith and Ragan models))<br>Reflective Journal Prompt |

| | | | |
|---|---|---|---|
| Apply ID principles & the TPACK model in the integration of technology tools for blended course delivery | Selection & Evaluation of appropriate technologies for T&L in course context | Content Knowledge<br><br>Pedagogical Content Knowledge<br><br>Technological Content Knowledge | **Hands-on, Authentic, Reflective, and Project-based Learning, Role-playing**<br>Details: Online/face-to-face oral presentations /proposals<br><br>Graphic representation of ID model and TPACK applied to a course unit/module<br>Reflective Journal Prompt |
| Combine ID Principles and the TPACK with the COI for blended course design. | Creation of online activities for learning | COI (Teaching Presence, Social Presence and Cognitive Presence) | **Collaborative, hands-on, authentic, Reflective, and Project-based Learning**<br><br>**Details:** Create an instructional sequence matrix using the template provided, and identify the elements of the COI in it.<br>Reflective Journal Prompt |
| Develop/design a Blended Course based TPACK, COI & ID Principles in the UWI's LMS. | Course Design based on TPACK, COI, and your ID & Context<br><br>Intellectual Property & Ethical Issues of BL. | TPACK, COI | **Collaborative, hands-on, authentic, Reflective, and PBL, Modelling.**<br><br>Details: Use the ID model, the TPACK and COI frameworks, and the instructional sequence they recently created, to design a blended course in the LMS<br>Reflective Journal Prompt |

The intervention program is heavily influenced by the TPACK and COI frameworks. TPACK addresses many of the concerns of the COI model. According to Garrison (2017), the core function of the COI framework is "to manage and monitor the dynamic for thinking and learning collaboratively" (p.24). Similar to the TPACK framework, the COI framework has been heavily researched by Akyol, Garrision and Ozden (2009) for example, for the benefits it adds to blended/online learning in particular such as "greater cohesion which supports increased collaboration […] enhancing metacognitive awareness and ability to learn" (Garrision, 2017, p.106). To this end, the COI has three primary components in blended learning which include social presence, cognitive presence and teaching presence and the interactions among these components.

As seen in the diagram below, these components are integrated into the TPACK framework, which is also designed for blended/online learning and advocates a transactional approach to the teaching and learning experience. The intervention combines the two frameworks to ensure that perception and competency are both incorporated in the participants' blended course designs. Thus, the TPACK may focus on the types of knowledge and/or perceptions needed for such designs, the COI may help this knowledge translate to actual measurable components in the blended courses they develop. The intervention therefore proposes that incorporating the two allows for a more thorough blended course design.

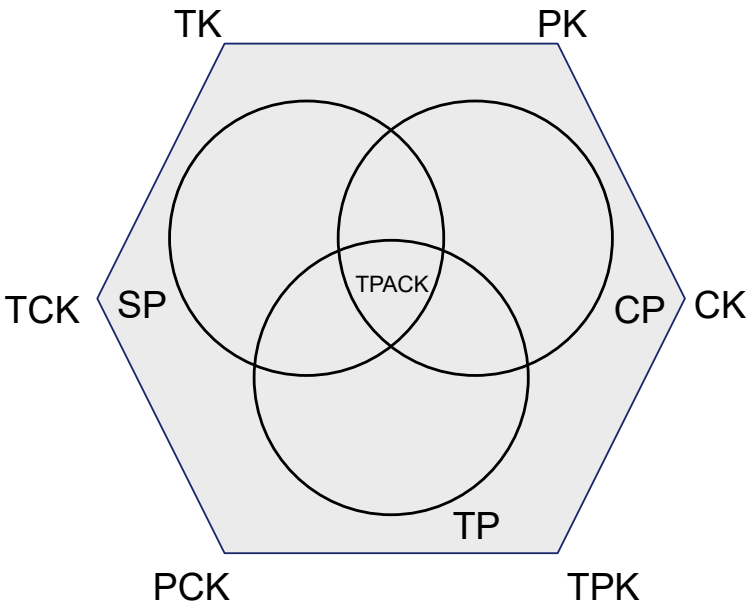
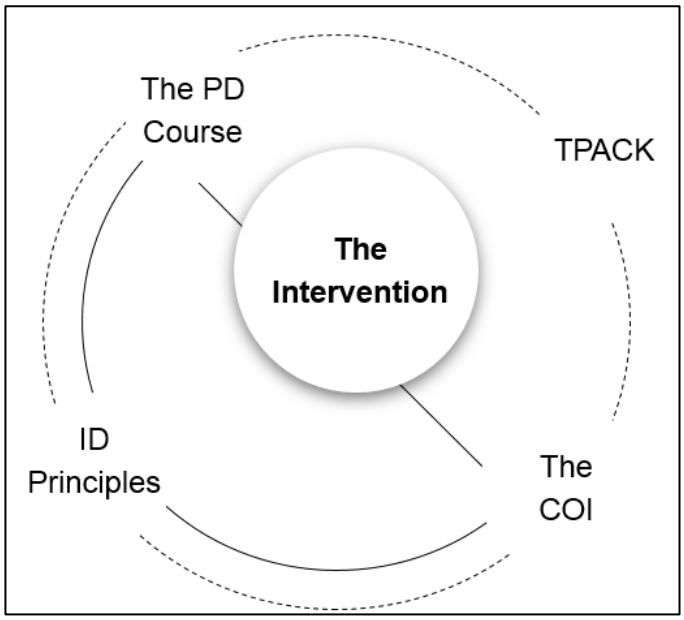



*Figure 4.1* The Theoretical Frameworks in the Professional Development/Training Course

The proposed intervention to mitigate the POP is multi-dimensional. It incorporates the principles of instructional design as well as the TPACK and COI frameworks into one professional development/training course. More than just being informed by these principles and frameworks, it is important that this blended professional development/training course models what is expected of the participants. This would further ensure that the output, as seen in the logic model, is more easily achieved.

The Different Dimensions/Components of the Intervention



Appendix B

Learning Objectives, Rationales and Prerequisite Skills of the Intervention

| **Specific Learning Objectives** (By the end of this course, participants will be able to:) | **Rationale for Objective** | **Prerequisite/Component Skills** |
|---|---|---|
| Identify the components of the policy for blended learning at the UWI<br>**Classification:** Cognitive | According to the research Needs Assessment, the majority of subjects indicated that they were either not aware or mildly aware of the campus's policy. Most of these individuals did not teach properly blended courses. The policy outlines the blended learning model as well as the definition, avenues and support structures for blended course delivery on the campus. The policy is also part of the university's strategic plan. As such, knowledge of this policy will provide participants with the contextual framework to prepare their courses for blended delivery. | Identify units of the university's strategic plan |
| Outline the basic elements of a blended course.<br>**Classification:** Cognitive | This objective aims to sensitize participants to the universal trends and best practices in blended course design and delivery, which they will work towards. As such, this will provide participants with an idea of the final product (the blended course) they will develop/work towards during this program (as observed in the cognitive load model by Kester et al (2003) and Keller's (1987) ARCS Model). | Define blended learning<br><br>Describe the UWI's policy for blended learning<br><br>Compare different modes of course delivery (face-to-face, blended and online |

| | | |
|---|---|---|
| Compare various instructional design models for blended course delivery/learning.<br>**Classification:** Cognitive | Participants will need to know the advantages and disadvantages of various instructional models before deciding on one model they may use to develop their blended courses. | Define instructional design<br><br>List instructional design models<br><br>Evaluate instructional design models in a specific context |
| Apply ID principles & the TPACK model in the integration of technology tools for blended course delivery.<br>**Classification:** Cognitive | The TPACK model is the approach that will guide participants to incrementally develop their blended courses. TPACK will be used to outline the various knowledge (such as pedagogical or technological knowledge) and components of a blended course. It is important that each of these facets are met for effective blended course design and implementation. | Identify the components of the TPACK framework<br><br>Describe the TPACK framework in a specific context<br><br>Evaluate the application of the TPACK framework to blended course design |
| Combine ID Principles and the TPACK with the COI for blended course design.<br>**Classification:** Psychomotor | Participants will use TPACK in their course contexts and fields. This will ensure that technology tools are not arbitrarily selected by participants in designing their blended courses. Faculty will learn to make more systematic selections/integrations of technology tools by first considering other facets of blended course design and delivery such as the pedagogical or content facets. | Describe the COI model<br><br>Evaluate the use of COI with the TPACK model and ID principles in blended course design.<br><br>Use the COI and TPACK models and ID principles to inform technology tool selection for blended course design. |
| Develop/design a Blended Course based TPACK, COI & ID Principles in the UWI's LMS.<br>**Classification:** Psychomotor | This will be the final product which participants will be ultimately assessed. All activities in the intervention are geared towards this primary objective. Once participants can accomplish this, then the program can be evaluated as effective. | Design a blended course on the campus' LMS using ID principles, and the TPACK, COI models. |

Appendix C

Instructional strategies and materials of the intervention program

| **Strategies for Objectives** (By the end of this program, participants will be able to:) | **Instructional Activities** | **Learner Participation** | **Instructional Media** | **Assessment Strategy** |
|---|---|---|---|---|
| Identify three components of the policy for blended learning at the UWI<br>**Classification:** Cognitive | **Collaborative, Reflective and Inquiry-based Learning**<br><br>Details: Online discussion amongst participants in the program<br><br>An identification and analysis of issues/challenges relating to blended learning at the UWI/campus | Individually, participants will identify three things they know about the policy.<br><br>Using an online forum, participants will discuss some of the problems they encountered designing blended courses, and possible solutions they propose (for example, if the problem is a lack of resources, participants may suggest collaborating with other to provide alternative resources). They will post this in the online discussion on the Learning Management System (LMS) for further review. | The campus LMS that will facilitate the online discussion.<br><br>A web-conferencing software to facilitate a 1 hour synchronous session with the participants. | Participation and ratings of discussion posts. |

| | | | | |
|---|---|---|---|---|
| Outline the basic elements of a blended course.<br>**Classification:** Cognitive | **Collaborative Project-based Learning**<br><br>Details: Use the readings and a sample/model blended course to create a graphic/diagram illustrating the different components of successful blended course. | In separate groups, participants will be given a sample of a blended course outline and a sample LMS course design to observe and identify the components/features that comprise a model blended course. They will assess the strengths and weaknesses of this course. This assessment will be posted on the LMS<br><br>Participants will be placed in groups and assess the strengths and weaknesses of different modes of delivery in a face-to-face/online presentation:<br>Group 1: Advantages and Disadvantages of Face-to-face instruction<br><br>Group 2: Advantages and Disadvantages of Online Instruction<br><br>Group 3: Advantages and Disadvantages of Blended instruction**.** | The campus's online Learning Management System (LMS) that will facilitate the online sessions and repository of the group work documents.<br><br>A web-conferencing software to facilitate a 1 hour synchronous session with the participants (for the presentations). | Participants will be assessed on their group presentations based on a rubric and participation in the group work. |

| | | | | |
|---|---|---|---|---|
| Compare various instructional design models for blended courses/learning.<br>**Classification:** Cognitive | **Collaborative Project-based Learning**<br><br>Details: (Online group presentations and discussion on 3 primary instructional design models (ADDIE, Kemp, Dick and Carey, Smith and Ragan models)) | Participants are required to create a presentation (or tutorial screencast) explaining and evaluating specific ID Models (One model per group) and upload the screencast in *YouTube*. Participants will thereafter post the link to this screencast in an online group forum where persons from other groups will pose questions/comments on the models they have presented. | A web-conferencing software for a 1 hour synchronous session with participants.<br><br>Podcasting or presentation software (e.g. *Screencast-o-matic, Pow Toons*),<br><br>*YouTube*<br><br>The campus' LMS. | Presentations will be assessed based on a rubric.<br><br>Participants will also be assessed for participation in online discussions. |
| Apply ID principles & the TPACK model in the integration of technology tools for blended course design.<br>**Classification:** Cognitive | **Hands-on, authentic and Project-based Learning, Role-playing**<br>Details: Online/face-to-face oral presentations /proposals<br><br>Graphic representation of ID model and TPACK applied to a course unit/module | In groups, participants will create a wiki explaining the different components of the TPACK framework and its fit within the UWI and SOE blended learning context. The wiki will function as an online resource to their blended course designs.<br><br>Individually, participants will create an instructional sequence outline or document for their blended course designs and outline the various components of ID and TPACK therein. | The campus LMS will facilitate the online sessions, documents and wiki they will be submitting.<br><br>A web-conferencing software to facilitate a 1 hour synchronous session with the participants. | The group wiki and will be used for assessment as per a rubric.<br><br>A review of the instructional sequence document and wiki will be done and feedback will be given for improvement as this will ultimately inform their subsequent blended course designs. |

| | | | | |
|---|---|---|---|---|
| Combine ID Principles and the TPACK with the COI for blended course design.<br>**Classification:** Cognitive, Psychomotor, Affective. | **Hands-on, authentic and Project-based Learning** | In groups, participants will update the wiki from the previous module, explaining the different components of the COI framework and its fit within the UWI and SOE blended learning context. The wiki will function as an online resource to inform their blended course designs.<br><br>Individually, participants will update their instructional sequence document from the previous module by including and identifying elements of the COI framework (teaching presence, social presence and cognitive presence) in their proposed blended course designs.<br><br>Participants will share their outlines, documents or presentations in an online forum for peer feedback and make the necessary changes which they will submit in a repository. These presentations must be presented in a creative, technology-mediated way (selecting from a list of graphic technology tools such as *Vimeo, Prezi, Flipsnak, Bubbl.us, Slideshare, Padlet*) | A web-conferencing software to facilitate a 1 hour synchronous session with the participants.<br><br>Presentation and/or graphic/mind-mapping software (e.g. PowerPoint, Bubbl.us)<br><br>Presentation Hardware (projector, computer)<br><br>The online Learning Management System (LMS) | Presentations will be assessed based on a standardized rubric.<br><br>Participants provide feedback on their graphic illustrations. |

| | | | | |
|---|---|---|---|---|
| Design a Blended Course based on TPACK, COI & ID Principles in the UWI's LMS.<br>**Classification:** Psychomotor | **Hands-on, authentic and Project-based Learning**<br><br>Details: Use the ID model they previously created and the TPACK and COI frameworks to design a blended course in the LMS | Using the TPACK and COI models and ID principles, participants will design their blended courses in the LMS. To this end, participants must incorporate several technology tools from a list (*Vimeo, Screencast-o-matic, Padlet, online forums, Kahoot, PowToons*) in their designs. Participants will be encouraged to collaborate with each other on one of the media they produce/use (the creation of instructional artifacts (e.g. screencast creation)) in their course designs. | The online Learning Management System (LMS) | Facilitator assesses the blended course according to an established rubric for blended learning. |

# Appendix D

## OSCQR Rubric for Blended Course Designs

| OSCQR 3rd Edition | | | | | | | |
|---|---|---|---|---|---|---|---|
| | *Estimated time needed for revision:* | Sufficiently Present | Minor Revision *1/2 hour or less* | Moderate Revision *1/2-2 hours* | Major Revision *2+ hours* | Not Applicable | Action Plan |
| **1. COURSE OVERVIEW AND INFORMATION** | | | | | | | |
| 1 | Course includes Welcome and Getting Started content. | | | | | | |
| 2 | An orientation or overview is provided for the course overall, as well as in each module. Students know how to navigate and what tasks are due. | | | | | | |
| 3 | Course includes a Course Information area that deconstructs the syllabus for learners in a clear and navigable way. | | | | | | |
| 4 | A printable syllabus is available to learners (PDF, HTML). | | | | | | |
| 5 | Course includes links to relevant campus policies on plagiarism, computer use, student grievances, accommodating disabilities, etc. | | | | | | |
| 6 | Course provides access to campus and Open SUNY resources (technical help, orientation, tutoring). | | | | | | |
| 7 | Course information states whether the course is fully online, blended, or web-enhanced. | | | | | | |
| 8 | Appropriate methods and devices for accessing and participating in the course are communicated (mobile, publisher websites, secure content, pop-ups, browser issue, microphone, webcam). | | | | | | |
| 9 | Course objectives/outcomes are clearly defined, measurable, and aligned to student learning activities and assessments. | | | | | | |
| 10 | Course provides contact information for instructor, department, and program. | | | | | | |
| **2. COURSE TECHNOLOGY & TOOLS** | | | | | | | |
| 11 | Requisite skills for using technology tools (websites, software, and hardware) are clearly stated and supported with resources. | | | | | | |
| 12 | Technical skills required for participation in course learning activities scaffold in a timely manner (orientation, practice, and application - where appropriate). | | | | | | |
| 13 | Frequently used technology tools are easily accessed. Any tools not being utilized are removed from the course menu. | | | | | | |
| 14 | Course includes links to privacy policies for technology tools. | | | | | | |
| 15 | Any technology tools meet accessibility standards. | | | | | | |

## OSCQR 3rd Edition

| | | Sufficiently Present | Minor Revision | Moderate Revision | Major Revision | Not Applicable | Action Plan |
|---|---|---|---|---|---|---|---|
| | *Estimated time needed for revision:* | | *1/2 hour or less* | *1/2-2 hours* | *2+ hours* | | |
| **3. DESIGN AND LAYOUT** | | | | | | | |
| 16 | A logical, consistent, and uncluttered layout is established. The course is easy to navigate (consistent color scheme and icon layout, related content organized together, self-evident titles). | | | | | | |
| 17 | Large blocks of information are divided into manageable sections with ample white space around and between the blocks. | | | | | | |
| 18 | There is enough contrast between text and background for the content to be easily viewed. | | | | | | |
| 19 | Instructions are provided and well written. | | | | | | |
| 20 | Course is free of grammatical and spelling errors. | | | | | | |
| 21 | Text is formatted with titles, headings, and other styles to enhance readability and improve the structure of the document. | | | | | | |
| 22 | Flashing and blinking text are avoided. | | | | | | |
| 23 | A sans-serif font with a standard size of at least 12 pt is used. | | | | | | |
| 24 | When possible, information is displayed in a linear format instead of as a table. | | | | | | |
| 25 | Tables are accompanied by a title and summary description. | | | | | | |
| 26 | Table header rows and columns are assigned. | | | | | | |
| 27 | Slideshows use a predefined slide layout and include unique slide titles. | | | | | | |
| 28 | For all slideshows, there are simple, non-automatic transitions between slides. | | | | | | |
| **4. CONTENT AND ACTIVITIES** | | | | | | | |
| 29 | Course offers access to a variety of engaging resources that facilitate communication and collaboration, deliver content, and support student learning and engagement. | | | | | | |
| 30 | Course provides activities for students to develop higher-order thinking and problem-solving skills, such as critical reflection and analysis. | | | | | | |
| 31 | Course provides activities that emulate real world applications of the discipline, such as experiential learning, case studies, and problem-based activities. | | | | | | |
| 32 | Where available, Open Educational Resources, free, or low cost materials are used. | | | | | | |
| 33 | Course materials and resources include copyright and licensing status, clearly stating permission to share where applicable. | | | | | | |
| 34 | Text content is available in an easily accessed format, preferably HTML. All text content is readable by assistive technology, including a PDF or any text contained in an image. | | | | | | |
| 35 | A text equivalent for every non-text element is provided ("alt" tags, captions, transcripts, etc.). | | | | | | |
| 36 | Text, graphics, and images are understandable when viewed without color. Text should be used as a primary method for delivering information. | | | | | | |
| 37 | Hyperlink text is descriptive and makes sense when out of context (avoid using "click here"). | | | | | | |

## OSCQR 3rd Edition

| | | Sufficiently Present | Minor Revision | Moderate Revision | Major Revision | Not Applicable | Action Plan |
|---|---|---|---|---|---|---|---|
| | *Estimated time needed for revision:* | | *1/2 hour or less* | *1/2-2 hours* | *2+ hours* | | |
| **5. INTERACTION** | | | | | | | |
| 38 | Expectations for timely and regular feedback from the instructor are clearly stated (questions, email, assignments). | | | | | | |
| 39 | Expectations for interaction are clearly stated (netiquette, grade weighting, models/examples, and timing and frequency of contributions). | | | | | | |
| 40 | Students have an opportunity to get to know the instructor. | | | | | | |
| 41 | Course contains resources or activities intended to build a sense of class community, support open communication, and establish trust (at least one of the following - Ice-breaker, Bulletin Board, Meet Your Classmates, Ask a Question discussion forums). | | | | | | |
| 42 | Course offers opportunities for student to student interaction and constructive collaboration. | | | | | | |
| 43 | Students are encouraged to share resources and inject knowledge from diverse sources of information in their course interactions. | | | | | | |
| **6. ASSESSMENT AND FEEDBACK** | | | | | | | |
| 44 | Course grading policies, including consequences of late submissions, are clearly stated in the course information area or syllabus. | | | | | | |
| 45 | Course includes frequent and appropriate methods to assess students' mastery of content. | | | | | | |
| 46 | Criteria for the assessment of a graded assignment are clearly articulated (rubrics, exemplary work). | | | | | | |
| 47 | Students have opportunities to review their performance and assess their own learning throughout the course (pre-tests, automated self-tests, reflective assignments, etc.). | | | | | | |
| 48 | Students are informed when a timed response is required. Proper lead time is provided to ensure there is an opportunity to prepare an accommodation. | | | | | | |
| 49 | Students have easy access to a well designed and up-to-date gradebook. | | | | | | |
| 50 | Students have multiple opportunities to provide descriptive feedback on course design, course content, course experience, and ease of online technology. | | | | | | |

**OVERALL NARRATIVE**

Appendix E

TPACK survey instrument (adapted from Schmidt and Koehler, 2009)

Thank you for taking time to complete this questionnaire. Please answer each question to the best of your knowledge. Your thoughtfulness and candid responses will be greatly appreciated. Your individual name or identification number will not at any time be associated with your responses. Your responses will be kept completely confidential and will not influence your progress through this course.

**DEMOGRAPHIC INFORMATION**

1. Your UWI e-mail address

   _____

2. Gender
   a. Female
   b. Male

3. Age range
   a. 20-30 years
   b. 31-40 years
   c. 41-50 years
   d. 51-60 years
   e. Over 61 years

4. Job Title

   _____

5. Area of Specialization
   a. Art
   b. Early Childhood Education
   c. English and Language Arts
   d. Foreign Language
   e. History
   f. Instructional Design
   g. Mathematics
   h. Music
   i. Science
   j. Social Studies
   k. Other

6. Years of teaching experience:
   a. 1-5 years
   b. 6-10 years
   c. 10-15 years
   d. 15 – 20 years
   e. Over 20 years

7. What was the most recent blended course you taught (course name, code, semester and year)?

   _____

8. When will this course be offered again at the UWI?

_____

9. Have you experienced any prior training in blended learning or course designs?
   a. Yes
   b. No

*Technology is a broad concept that can mean a lot of different things. For the purpose of this questionnaire, technology is referring to digital technology/technologies. That is, the digital tools we use such as computers, laptops, iPods, handhelds, interactive whiteboards, software programs, etc. Please answer all of the questions and if you are uncertain of or neutral about your response you may always select "Neither Agree or Disagree"*

| | Strongly Disagree | Disagree | Neither Agree or Disagree | Agree | Strongly Agree |
|---|---|---|---|---|---|
| **TK (Technology Knowledge)** | | | | | |
| 1. I know how to solve my own technical problems. | | | | | |
| 2. I can learn technology easily. | | | | | |
| 3. I keep up with important new technologies. | | | | | |
| 4. I frequently play around the technology. | | | | | |
| 5. I know about a lot of different technologies. | | | | | |
| 6. I have the technical skills I need to use technology. | | | | | |
| **CK (Content Knowledge)** | | | | | |
| **Mathematics** | | | | | |
| 7. I have sufficient knowledge about mathematics. | | | | | |
| 8. I can use a mathematical way of thinking. | | | | | |
| 9. I have various ways and strategies of developing my understanding of mathematics. | | | | | |
| **Social Studies** | | | | | |
| 10. I have sufficient knowledge about social studies. | | | | | |
| 11. I can use a historical way of thinking. | | | | | |
| 12. I have various ways and strategies of developing my understanding of social studies. | | | | | |
| **Science** | | | | | |
| 13. I have sufficient knowledge about science. | | | | | |
| 14. I can use a scientific way of thinking. | | | | | |
| 15. I have various ways and strategies of developing my understanding of science. | | | | | |
| **Literacy** | | | | | |
| 16. I have sufficient knowledge about literacy. | | | | | |
| 17. I can use a literary way of thinking. | | | | | |
| 18. I have various ways and strategies of developing my understanding of literacy. | | | | | |

| PK (Pedagogical Knowledge) | | | | | |
|---|---|---|---|---|---|
| 19. I know how to assess student performance in a classroom. | | | | | |
| 20. I can adapt my teaching based-upon what students currently understand or do not understand. | | | | | |
| 21. I can adapt my teaching style to different learners. | | | | | |
| 22. I can assess student learning in multiple ways. | | | | | |
| 23. I can use a wide range of teaching approaches in a classroom setting. | | | | | |
| 24. I am familiar with common student understandings and misconceptions. | | | | | |
| 25. I know how to organize and maintain classroom management. | | | | | |

| PCK (Pedagogical Content Knowledge) | | | | | |
|---|---|---|---|---|---|
| 26. I can select effective teaching approaches to guide student thinking and learning in mathematics. | | | | | |
| 27. I can select effective teaching approaches to guide student thinking and learning in literacy. | | | | | |
| 28. I can select effective teaching approaches to guide student thinking and learning in science. | | | | | |
| 29. I can select effective teaching approaches to guide student thinking and learning in social studies. | | | | | |
| **TCK (Technological Content Knowledge)** | | | | | |
| 30. I know about technologies that I can use for understanding and doing mathematics. | | | | | |
| 31. I know about technologies that I can use for understanding and doing literacy. | | | | | |
| 32. I know about technologies that I can use for understanding and doing science. | | | | | |
| 33. I know about technologies that I can use for understanding and doing social studies. | | | | | |
| **TPK (Technological Pedagogical Knowledge)** | | | | | |
| 34. I can choose technologies that enhance the teaching approaches for a lesson. | | | | | |
| 35. I can choose technologies that enhance students' learning for a lesson. | | | | | |
| 36. My training and expertise have caused me to think more deeply about how technology could influence the teaching approaches I use in my classroom. | | | | | |
| 37. I am thinking critically about how to use technology in my classroom. | | | | | |

| | | | | | |
|---|---|---|---|---|---|
| 38. I can adapt the use of the technologies that I am learning about to different teaching activities. | | | | | |
| 39. I can select technologies to use in my classroom that enhance what I teach, how I teach and what students learn. | | | | | |
| 40. I can use strategies that combine content, technologies and teaching approaches that I learned about in my coursework in my classroom. | | | | | |
| 41. I can provide leadership in helping others to coordinate the use of content, technologies and teaching approaches in my department. | | | | | |
| 42. I can choose technologies that enhance the content for a lesson. | | | | | |

| **TPACK (Technology Pedagogy and Content Knowledge)** | | | | | |
|---|---|---|---|---|---|
| 43. I can teach lessons that appropriately combine mathematics, technologies and teaching approaches. | | | | | |
| 44. I can teach lessons that appropriately combine literacy, technologies and teaching approaches. | | | | | |
| 45. I can teach lessons that appropriately combine science, technologies and teaching approaches. | | | | | |
| 46. I can teach lessons that appropriately combine social studies, technologies and teaching approaches. | | | | | |

***Please complete this section by writing your responses in the boxes.***

47. Describe a specific episode where a professor/instructor/educator effectively demonstrated or modeled combining content, technologies and teaching approaches in a lesson. Please include in your description what content was being taught, what technology was used, and what teaching approach(es) was implemented.

48. Describe a specific episode where you effectively demonstrated or modeled combining content, technologies and teaching approaches in a lesson. Please include in your description what content was being taught, what technology was used, and what teaching approach(es) was implemented. If you have not observed a teacher modeling this, please indicate that you have not.

49. Given your experience, describe how you see yourself/expertise with regard to teaching with technology and blended course designs

## Appendix F

### Proposed guiding questions to be used in the focus group

1. How has this training experience changed your view of blended course designs?
2. Do you feel more confident in designing a blended course? What about this program may have contributed to your response?
3. To what extent did the TPACK and COI models enhance your ability to design a blended course?
4. Do you now have a more systematic approach to blended course designs? If so, can you describe/outline it briefly?
5. With regard to blended course designs, identify at least three things that you could not have done before, but can do now as a result of the training experience.

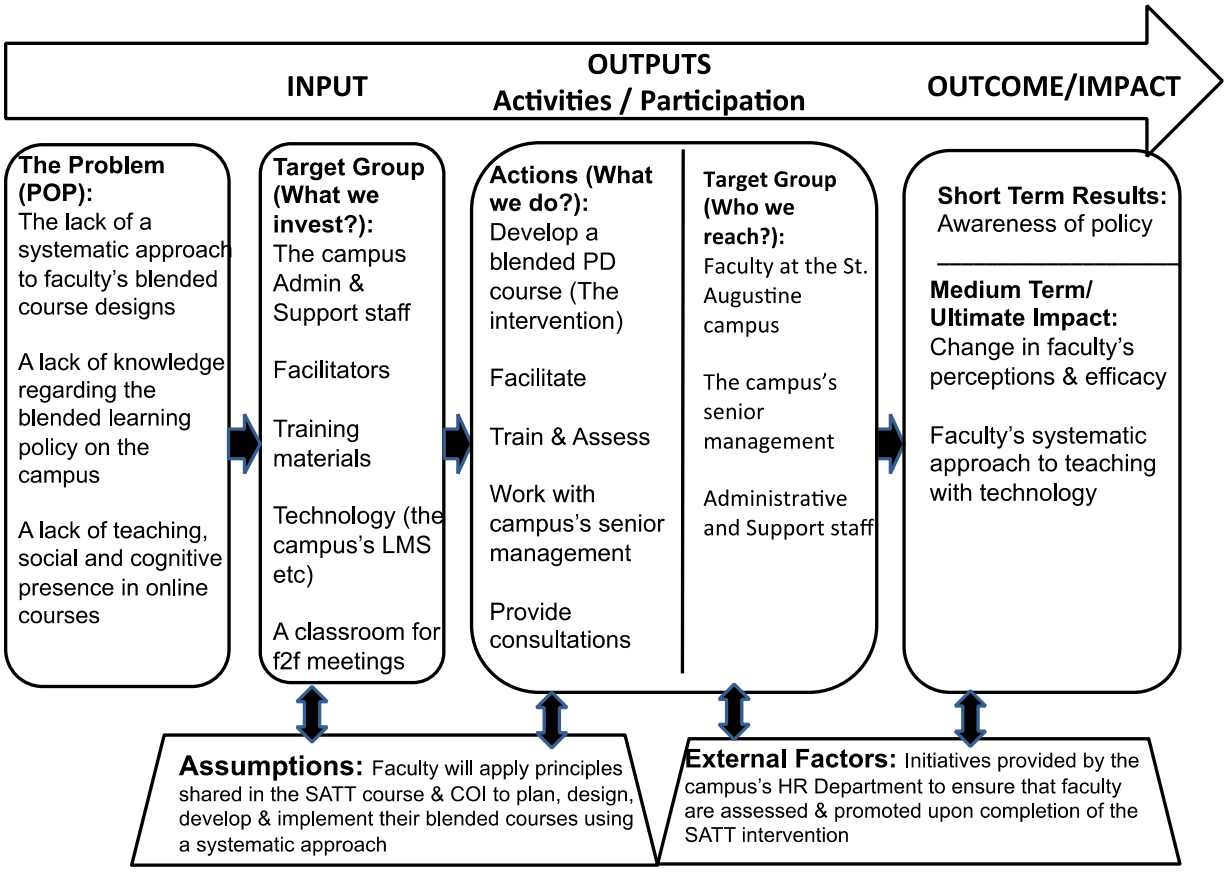
Appendix G

Proposed guiding questions/prompts for the journals

1. This week, you learned about TPACK and the COI models. Describe one thing that stood out to you in these models, and describe how they may assist you in blended course designs.
2. In this module, you learned about game-based learning. Explain how game-based learning can be incorporated as an online component in your blended course. To this end, what technology tool and/or game can be used? Also, what content and teaching strategies you may use to incorporate your game into your blended course?
3. You were exposed to the power of animations for teaching and learning this week. Examine how animations can be incorporated in your blended course design. Identify the content, pedagogical/instructional strategy and technology tool you may use to incorporate animations into your course.
4. This week, we looked at screencasting as a powerful tool for teaching and learning in blended course designs. Considering the elements of the TPACK and COI models, explain how screencasting can be used in your blended course.
5. Thus far, you have been exposed to numerous technology tools for blended course designs. From the technology tool kit, and using the TPACK and COI models, describe the systematic process you may use to incorporate any of the tools in your blended course.
6. Identify one perception you had about blended course designs (or blended teaching and learning). How has this training experience helped to change that perception? How has this change in perception translated to a change in your efficacy regarding blended course designs?

Appendix H

Logic Model




**The Logic Model**

## The Logic Model

The intervention for this research can be better described using the logic model. The logic model is a graphic illustration that outlines the implementation of the aforementioned intervention, highlighting details such as the personnel and materials or resources needed to achieve the desired outcomes and by extension, accomplish the research goal. The diagram outlines the major problem along with two underlying factors. The problem that the intervention is mainly designed to address is the arbitrary approach

to faculty's use of technology in a blended environment. The desired change that may result from this intervention is the systematic use of technology by faculty in the blended courses they teach. As previously mentioned, two underlying factors to this POP are faculty's lack of knowledge regarding the university's policy for blended learning and the general lack of social, cognitive and teaching presence in the online components of faculty's blended courses. These causal or correlational factors, were revealed in the needs assessment that was previously conducted. To address these problems, the logic model outlines the inputs, activities, outputs and outcomes of the intervention.

The inputs required to conduct the intervention include personnel such as technical assistants and other leaders or stakeholders, as well as teaching materials and an online platform. Abdullah, DeWitt and Norlidah (2013) attest to the need for the inclusion of support personnel and stakeholders in their research on school leadership and the use of technology among educators. They conclude that senior management, governors as well as technicians and administrators are needed to motivate, empower and support educators and thereby implement change in the organization (Abdulla, DeWitt & Norlidah, 2013). The personnel at the Campus Information Technology Services (CITS), for example, will be needed to ensure that the campus' Learning Management System (LMS) is fully functional as the intervention will be using this platform to deliver the blended professional development course and for participants to build their model blended courses. Course materials such as articles, activities and podcasts will be developed, designed and uploaded onto this LMS for participants. Additional software may also be needed to facilitate synchronous sessions with faculty, and to record the instructional podcasts. To this end, the intervention will make use of Blackboard

Collaborate since it has been acquired by the campus. Free technology tools may also be used to provide faculty with a hands-on experience in creating instructional materials and activities as they develop their blended courses and progress through the intervention (Clark, 2010).

The actions or activities to be taken in this intervention include the planning, designing and development of a blended professional development/training course. The blended professional development/training course will provide avenues for both formal and informal learning, instruction, collaboration and brainstorming among faculty. A study conducted by Seidel (2010) emphasized the impact of ongoing formal and informal support and training. In this study, faculty reported spending approximately thirty-six (36) hours a year learning how to incorporate technology into their instructional practices. The duration of the blended professional development/training course within this context will be reminiscent of the thirty-six (36) training contact hours in Seidel's (2010) study. Similar to Seidel's (2010) intervention, faculty will enroll in this on-going blended course using an online platform and will be introduced to a range of pedagogical principles, technology tools and practices in blended course design. Faculty will remain as content specialists for the blended courses they will incrementally develop throughout the intervention.

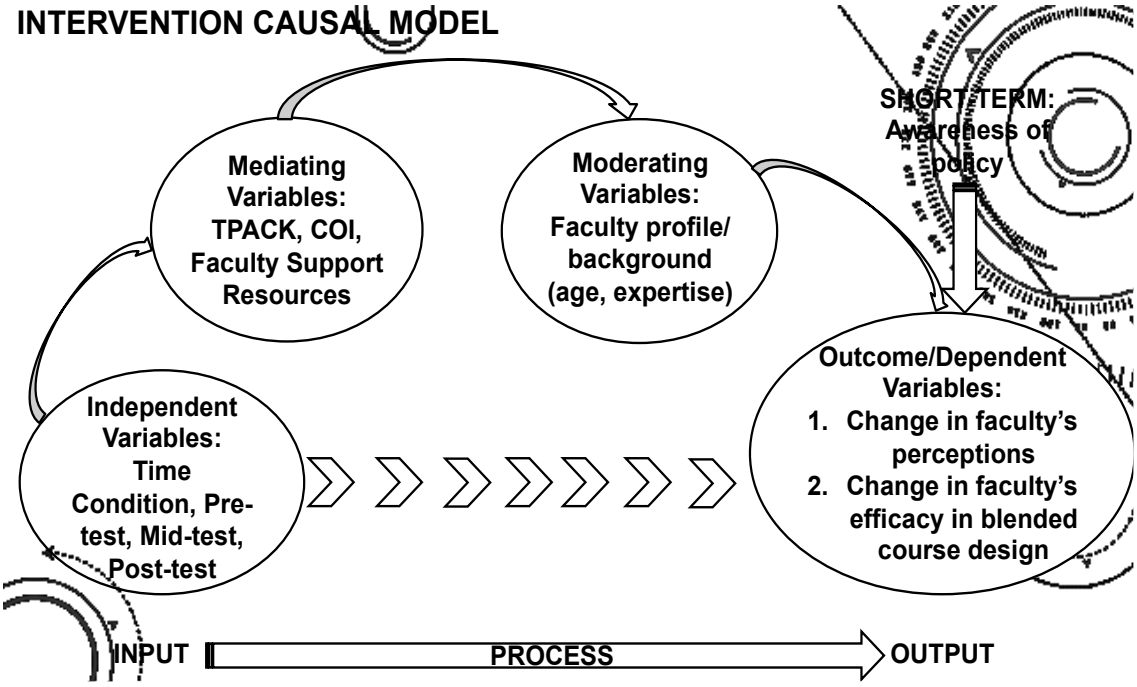
By the end of this intervention short-term and medium-term outcomes will be met. The short-term outcome is the faculty's awareness of the policy for blended learning, and the medium-term outcome is their improved blended course designs. These outcomes will ultimately determine the success/impact of the intervention. In the needs assessment, faculty indicated a lack of knowledge of this policy, and their lack of

awareness seemed to be correlated with the minimal use of technology in their courses. It is hoped that this intervention will change this by informing faculty of the policy and its intricacies along with the senior management's vision for blended learning on the campus (Gregory, Hardiman, Yarmolinskaya, Rinne, & Limb, 2013; Yukl, 1994). In a study by Yukl (1994), a lack of awareness of certain policies and the vision in a specific context correlated to the lack of action by parties involved. The communication of this vision or goal will also provide the springboard to engage faculty in creative thinking and problem solving (Gregory, Hardiman, Yarmolinskaya, Rinne, & Limb, 2013) as it pertains to blended learning and course design.

The medium impact is also the primary desired outcome of this intervention. The medium outcome of this research is two-fold, firstly addressing faculty perceptions or attitudes to blended course design and secondly, faculty's competence in blended course design. This intervention will be designed to address faculty's apprehension to teaching with technology (blended course design) firstly by addressing their perceptions. A study by Georgina and Hosford (2008) illustrated that faculty with a fear or aversion for technology often refrained or minimally used technology or a systematic approach. Based on their research, the positive change in attitudes should more easily correlate to an improvement in faculty's use of technology to teach via their blended course designs. To this end, faculty will design their blended courses according to the principles taught in the professional development training course. This is the main goal or crux of this intervention, and should be completed by the final week (week 4) of the course. Faculty will receive a certificate of completion once they have satisfactorily completed this task.

Appendix I

The Causal Model



Appendix J

Technological Pedagogical Content Knowledge (TPACK)

TPACK, as proposed by Koehler and Mishra (2012), is a framework for the understanding of technology integration for teaching and learning. It builds on the work of Shulman, who introduced the pedagogical content knowledge (PCK) model. Kohler and Mishra (2012) add technology knowledge to this construct as development of this component is paramount to effective teaching and learning in the 21st century. More than just expound on the different kinds of knowledge that an educator should have (such as technological knowledge or pedagogical knowledge), the TPACK model emphasizes the inter-relations or over laps amongst each kind of knowledge. According to Wetzel (2012), TPACK acknowledges the connections between each component of the model, and thus proposes Technological Pedagogical Knowledge (TPK), Pedagogical Content Knowledge (PCK) and Technology Content Knowledge (TCK). A combination of these three kinds of knowledge produces TPACK – the effective integration of technology for teaching and learning. Koehler and Mishra (2012) posit that every component of the TPACK framework is important. In this research, each of the seven components of the TPACK framework functions as a construct. The table below defines each of these constructs.

*TPACK constructs and operational definitions*

| **Constructs** | **Operational Definitions** |
|---|---|
| CK (Content Knowledge) | "Teachers' knowledge about the subject matter to be learned or taught […] knowledge of concepts, theories, ideas, organizational frameworks [and] established practices and approaches toward developing such knowledge" (Koehler & Mishra, 2009). |

| | |
|---|---|
| PK (Pedagogical Knowledge) | "Teachers' deep knowledge about the processes and practices or methods of teaching and learning […] understanding how students learn, general classroom management skills, lesson planning, and student assessment." (Koehler & Mishra, 2009). |
| TK (Technological Knowledge) | Knowledge regarding ways of thinking about, and working with ICTs; recognizing when they can assist or impede the accomplishment of a goal, and adapting to technological advances (Koehler & Mishra, 2009). |
| PCK (Pedagogical Content Knowledge) | "Knowledge of pedagogy that is applicable to the teaching of specific content [it is] the transformation of the subject matter for teaching […] this transformation occurs as the teacher […] adapts and tailors the instructional materials to alternative conceptions and students' prior knowledge. (Koehler & Mishra, 2009). |
| TCK (Technological Content Knowledge) | "An understanding of the manner in which technology and content influence and constrain one another. Teachers need to understand which specific technologies are best suited for addressing subject-matter learning in their domains and how the content dictates or perhaps even changes the technology—or vice versa" (Koehler & Mishra, 2009). |
| TPK Technological Pedagogical Knowledge) | "An understanding of how teaching and learning can change when particular technologies are used in particular ways [and] the pedagogical affordances and constraints of a range of technological tools as they relate to […] appropriate pedagogical designs and strategies" (Koehler & Mishra, 2009). |
| TPACK (Technological Pedagogical Content Knowledge) | "TPACK is […] an understanding of […] pedagogical techniques that use technologies in constructive ways to teach content" (Koehler & Mishra, 2009). |

Appendix K

Community of Inquiry (COI): Operational Definitions and Indicators

The COI is a theoretical framework that outlines procedures for the "collaborative construction of personal meaningful and shared understanding" (Garrison, 2017, p.24). It aids in the design and delivery of substantive learning experiences through three interdependent elements – social presence, cognitive presence and teaching presence. These elements function as the constructs for faculty's efficacy in blended course designs in this research. The table below provides the operational definitions of each of these constructs, including sub-classifications, and more detailed examples of indicators of these presences.

*The Constructs and Indicators of the COI*

| Construct | Operational Definitions | Category & Indicators | Examples |
|---|---|---|---|
| Social Presence | "The ability of participants to identify with the community [or group], communicate purposefully in a trusting environment, and develop inter-personal relationships by way of projecting their individual personalities." (Garrison, 2009). | **Affective:** expression of emotions, use of humor, self-disclosure. E.g. "I just can't stand it when…!!!" or "Where I work, this is what we do…" | Discussion Forums, Creation of online wikis, glossaries and other project-based artifacts. |
| | | **Interactive:** Continuing a thread, quoting others' messages, complimenting/agreeing with others, asking questions. E.g. Anyone else had experience with….?" | |
| | | **Cohesive:** Vocatives, salutations, use of inclusive pronouns such as "we". E.g. "I think John made a great point." | |
| Teaching Presence | The systematic design, facilitation, and direction of cognitive and social processes for the accomplishment of personally meaningful and educationally worthwhile learning outcomes (Anderson, Rourke, Garrison, & Archer, 2001). The purpose here is to bring the elements of the COI together for balance and alignment with learning outcomes (Garrison, 2017). | **Instructional Design and Organization:** Decisions regarding course goals, timetables, and curricula and materials reflect the instructor's role as the lead designer and coordinator of students' learning experience (Anderson, et al., 2001). E.g "This week we will be discussing…" or "Please post a message by Friday" | Setting curriculum,<br>Utilizing media effectively,<br>Design methods,<br>Establishing netiquette. |
| | | **Facilitating discourse**: Instructors' role in promoting productive discourse by focusing class discussions, raising pertinent questions, finding areas of consensus, and moderating student participation (Shea, Li, & Pickett, 2006). E.g. I think we're getting a little off track here" or "thank you for your insightful comments" | Identifying areas of agreement/disagreement<br>Encouraging, acknowledging, or reinforcing student contributions,<br>Drawing in participants, prompting discussion,<br>Setting climate for learning |

| | | | |
|---|---|---|---|
| | | **Direct Instruction:** Coherent content presentation and the use of external resources/perspectives, and conducting evaluative activities, such as giving feedback or assessing students' understanding (Garrison & Cleveland-Innes, 2005). E.g. "Bates says…what do you think?" | Presenting content/questions, Focusing the discussion on specific issues, Summarize the discussion, Confirm understanding through assessment and explanatory feedback. |
| Cognitive Presence | The extent to which learners are able to construct and confirm meaning through sustained reflection and discourse (Garrison, Anderson, & Archer, 2001). It is about "critical thinking and scientific inquiry" (Garrison, 2017, p.26). | **Triggering Event/Evocative (Inductive):** a problem-posing event; considered evocative and inductive by nature in terms of conceptualizing a problem or issue (Garrison et al, 2005). | Presenting case-studies<br>Crossword puzzles<br>Hypothetic situations/scenarios<br>Problem-based/Inquiry-Based Learning strategies |
| | | **Exploration/Inquisitive (divergent):** a search for relevant information, reflecting an inquisitive and divergent process in the search for ideas to help make sense of a problem or issue. | Information exchange via group discussions, online presentations, screencasts, web-conferencing sessions.<br>Brainstorming via group discussions, and mind-maps |
| | | **Integration/Tentative (convergent):** the construction of a possible solution. It is a tentative conversion or connecting of relevant ideas for insight to the dilemma (Garrison et al, 2005). | Brainstorming via group discussions, and mind-maps. Hypothetic situations/scenarios<br>Problem-based/Inquiry-Based Learning strategies |
| | | **Resolution/Committed (deductive):** the process of critically assessing the concepts. It represents a commitment to a solution and deductively testing its validity (Garrison et al, 2005). | Information exchange via discussion groups, online presentations, screencasts, web-conferencing sessions). |

Appendix L

The OSCQR Rubric: Constructs, Operational Definitions and Indicators

The Open SUNY Course Quality Review (OSCQR) was originally designed to improve the instructional design of online or blended courses. It develops and evaluates courses based on six elements. These elements include course overview and layout (CL), course technology and tools (CT), design and layout (DL), content and activities (CA), interaction (I), and assessment and feedback (AF). While some of these elements overlap with the COI elements, such as content, activities and interaction which are part of CP, TP and SP respectively, the OSCQR instrument includes other elements that are beyond the COI such as design and layout of the online/blended course. The operational definitions for these elements are detailed in the table below.

| **OSCQR Construct** | **Operational Definition** | **Indicators/Examples** |
|---|---|---|
| CL (Course overview and Layout) | Provides the general overview of course and creates the course context for teaching and learning to take place in the online environment. | Course includes a welcome, contact information and orientation to modules.<br>Course includes resources/links to campus policies on plagiarism<br>Clearly defined objectives and assessments |
| CT (Course technology and Tools) | Focuses on the integration of ICTs needed for successful delivery and participation in the course. | Clear outline of prerequisite skills for ICT use (websites, hardware and software)<br>Frequently used technology tools are easily accessed<br>Unused tools are removed from the course |
| DL (Design and Layout) | Ensures that the navigation and aesthetics of the course are learner-centered or | A logical, consistent and uncluttered layout is established<br>Instructions are provided and well written |

| | | |
|---|---|---|
| | create an environment for learning. | Flashing and blinking texts are avoided |
| | | Labels are used appropriately via font sizes and colors that are easy to read. |
| CA (Content and Activities) | Ensures that the course has relevant materials, clear instructions and meaningful activities. This element mainly overlaps with CP in the COI framework. | Course contains activities that develop higher-order thinking and problem-solving skills |
| | | Open Educational Resources are freely used |
| | | Hyperlinked text is descriptive instead of using “click here” |
| | | Course materials include copyright, licensing status and references |
| I (Interaction) | Ensures that open communication is established among all course participants including the course instructor. This element mainly overlaps with SP in the COI framework. | Regular, clear feedback from the instructor |
| | | Learners are encouraged to share resources and inject knowledge from diverse sources |
| | | Course contains activities to build a sense of community among participants |
| | | Learners have opportunities to get to know the instructor |
| AF (Assessment and Feedback) | Ensures that assessment instructions align with learning objectives and that feedback is meaningful and timely. This element mainly overlaps with TP in the COI framework. | Course grading policies are clearly stated such as the penalties for late submissions |
| | | Criteria for assessment are clearly articulated via rubrics and sample work |
| | | Learners are informed when a time response is required. |

Appendix M

An Example of the TPACK Coding Process

| **Elements** | **Categories** | **Indicators (examples only)** | **Blended Course Features (examples)** |
|---|---|---|---|
| Cognitive Presence | Triggering Event | Sense of puzzlement | Course content, Instructions, quizzes, |
| | Exploration | Information exchange | |
| | Integration | Connecting ideas | |
| | Resolution | Apply new ideas | |
| Social Presence | Emotional Expression | Emoticons | Discussions forums, Group activities (PBL), |
| | Open Communication | Risk-free expression | |
| | Group Cohesion | Encouraging collaboration | |
| Teaching Presence | Instructional Management | Defining & initiating discussion topics | Instructions, feedback, moderating, |
| | Building Understanding | Sharing personal meaning | |
| | Direct Instruction | Focusing discussion | |

Appendix N

Participants' Participation Consent Form

Johns Hopkins University

# Homewood Institutional Review Board (HIRB)

## Informed Consent Form

**Title: A Systematic Approach to Faculty's Blended Course Designs**

**Principal Investigator: Dr. Wendy Drexler, Assistant Professor, Johns Hopkins University.**

**Date: Wednesday 22nd March, 2017.**

**PURPOSE OF RESEARCH STUDY:**

The purpose of this research study is for faculty (lecturers/instructors) to be cognizant of the campus's blended learning policy and instructional design principles while applying a systematic approach to teaching with technology. Upon demonstration or evidence of this goal, faculty may be eligible for a certificate of completion, and for assessment and promotion by the campus's senior management. Ultimately, this will reduce the faculty's arbitrary approach to blended course designs, and this is the primary goal of this research/program.

We anticipate that approximately 25 people will participate in this study.

**PROCEDURES:**

Participants will be required to actively participate in a blended training course and the instructional activities therein (discussions, synchronous sessions, creative problem-solving, incrementally designing and building a blended course as per instructional design principles. By the end of the program, participants will be aware of the university's policy for blended learning, improve his/her efficacy in blended course designs.

The entire program is made up of a blended training course for a 5 week duration.

**RISKS/DISCOMFORTS:**

Participation in this study may involve risks and discomforts that cannot be foreseen at this time. The research presents no greater than minimal risk. If any, potential/unforeseen risks associated with participation in this study are no greater than those encountered in daily life.

**BENEFITS:**

Participants' benefits from the research/program include their cognizance of the campus's blended learning policy and instructional design principles while applying a systematic approach to blended course designs. Evidence of this will be their design/development and implementation of a course for blended delivery according to sound instructional design principles. Participants may further benefit by using these courses in their regular professional duties/contexts subsequent to the program/intervention. Additionally, participants will receive a certificate of completion at the end of the program.

Others to benefit from the research include the students at the university as well as the senior management. The research may benefit the senior management as it aids in the implementation of its policy for blended learning (a hybrid of face-to-face and online instruction/activities). The research may benefit the students at the university as they will be the recipients of a more effective (enriching and engaging) teaching and learning experience which would help to improve their academic performance and equip them with 21st century skills in communication, technology, and research. Additionally, this study may benefit society if the results lead to a better understanding of a systematic approach to blended course designs.

**VOLUNTARY PARTICIPATION AND RIGHT TO WITHDRAW:**

Your participation in this study is entirely voluntary: You choose whether to participate. If you decide not to participate, there are no penalties, and you will not lose any benefits to which you would otherwise be entitled.

If you choose to participate in the study, you can stop your participation at any time, without any penalty or loss of benefits. If you want to withdraw from the study, please submit a completed electronic copy of the withdrawal form to the program/research administrator(s). Please ensure that you and your Head of Department/Faculty Dean signs this form before submission. This form should be submitted via electronic mail no later than three (3) weeks into the program.

Should you decide to officially withdraw by completing the aforementioned tasks, you will no longer have access to the training course or program materials. Additionally, you will not be eligible for a certificate of completion at the end of the program, and the university's senior management will not recognize any prior involvement/participation in the program for assessment and promotion.

If we learn any new information during the study that could affect whether you want to continue participating, we will discuss this information with you. This should occur a week prior to submitting your withdrawal form via a meeting with the program instructor/coordinator.

**CIRCUMSTANCES THAT COULD LEAD US TO END YOUR PARTICIPATION:**

Under certain circumstances we may decide to end your participation before you have completed the study. Specifically, we may stop your participation if you have failed to

satisfactorily complete or participate in tasks (projects, activities, sessions) for three (3) or more consecutive weeks.

Please note that this course of action will typically be preceded by a warning message alerting you to the potential dismissal from the program, and/or a request (sent from you, the instructor or an administrator) to meet with the program instructor/coordinator and address and/or mitigate any possible hurdles you may be encountering in the completion of tasks/the program. Failure to meet will result in your subsequent withdrawal/dismissal from the program.

There may also be other circumstances that would lead us to end your participation.

**ALTERNATIVES TO PARTICIPATION:**

Participation in this program via the satisfactory attendance and completion of tasks and deliverables (such as online sessions and discussions) will result in your successful completion of the program and subsequent certification. However, should you be unable to participate and perform in the program as expected, you can opt to meet with the program instructor for a series of face-to-face on hour (special tutorial) sessions to confer the same benefits of the program. These private alternative sessions may be individually done but attendance is mandatory. Failure to attend may result in a warning letter being issued to you and your possible withdrawal from the program.

**6.1.1.1.1.1 CONFIDENTIALITY:**

Any study records that identify you will be kept confidential to the extent possible by law. The records from your participation may be reviewed by people responsible for making sure that research is done properly, including members of the University of the West Indies' Office of Research Development and Transfer, the Johns Hopkins University Homewood Institutional Review Board and officials from government agencies such as the National Institutes of Health and the Office for Human Research Protections. (All of these are required to keep your identity confidential.) Otherwise, records that identify you will be available only to people working on the study, unless you give permission for other people to see the records.

The records from the study will be secured on an online database that is tied to the University of the West Indies, St. Augustine campus. These records will be password protected and code numbers or pseudo names (instead of your real names) will be used for your anonymity on data sheets. Should these datasheets be printed, they will be secured in a locked cabinet with limited/exclusive access.

**6.1.1.1.1.2 COSTS**

There are no costs to participants in this research.

**COMPENSATION:**

You will be entitled to several benefits upon completion of the program. In addition to an official certificate of completion distributed by the UWI's School of Education (SOE), you will also be allowed to use your newly designed blended course for use in your teaching contexts. If you end your participation before completing the study, you will not be eligible for the aforementioned benefits.

**IF YOU HAVE QUESTIONS OR CONCERNS:**

You can ask questions about this research study now or at any time during the study, by talking to the researcher(s) working with you or by calling Mr. Justin Zephyrine, eLearning Support Specialist at the Center for Excellence in Teaching and Learning, UWI at 1-868-319-141, or Justin.zephyrine@sta.uwi.edu

If you have questions about your rights as a research participant or feel that you have not been treated fairly, please call the Homewood Institutional Review Board at Johns Hopkins University at (410) 516-6580, or the Office of Research Development and Transfer at (868) 224-3723 or (868) 224-3722 or: 662-2002 ext (82483) or at ordkt@sta.uwi.edu

**SIGNATURES**

**WHAT YOUR SIGNATURE MEANS:**

Your signature below means that you understand the information in this consent form. Your signature also means that you agree to participate in the study.

By signing this consent form, you have not waived any legal rights you otherwise would have as a participant in a research study.

____

____

**Participant's Signature** **Date**

____

____

**Signature of Person Obtaining Consent** **Date**

**(Investigator or HIRB Approved Designee)**

## Appendix O

## Recruitment Email

Dear [Faculty].

My name is Justin Zephyrine. I am a doctoral student at the Johns Hopkins School of Education My research focuses on A Systematic Approach to Blended Course Designs. Specifically, I am interested in better understanding faculty attitudes toward blended course designs. Being employed at the university, I am sure you are aware of the campus's policy/vision for blended learning as well as the importance of faculty attitudes and efficacy in designing and developing blended courses.

I would like to invite you to participate in a study I am conducting as part of my doctoral dissertation. The study involves the application of instructional design principles and blended course design models for 21st century education. Engaging in this exercise may give you the opportunity to: 1) adopt a more systematic approach to designing/developing blended courses, 2) possess the necessary skills and attitudes for blended course designs as per the university's policy for blended learning. 3) improve the quality of your blended courses, 4) receive a certificate of completion in blended course design.

The research findings may be beneficial to campus and university stakeholders (faculty, instructional designers, managers, directors, policy makers, faculty trainers) who are involved in blended learning and blended course designs. Specifically, research findings may help to improve the skill set of faculty on the local campus and could be used by university stakeholders to inform initiatives for blended/online instruction in the other campuses across the Caribbean.

The criteria for inclusion in this study are as follows:

1. Faculty are employed at the university's SOE, and
2. Have taught a specific course within the past two academic years
3. Will be teaching the course within the upcoming academic year.

In this study you will be asked to participate in a five-week training program, with weekly sessions that include face-to-face and online activities. The total time commitment is 3 hours per week. You will be interviewed by the researcher for 15 minutes during the first, third and final weeks of the program. There will be a one hour focus group at the end of the program.

There are no anticipated risks to the participants. Your participation is completely voluntary and any data collected during the study will be kept secure and confidential.

I am attaching the informed consent form for your review. If you are interested in participating in this study, please sign the form and return it to me via email. If you have any questions about the study, please do not hesitate to contact me at

Justin.zephyrine@sta.uwi.edu. You may also contact the principal investigator, Dr. Wendy Drexler, at wdrexle1@jhu.edu.

I greatly appreciate your consideration and hope that you will choose to participate in this study.

I look forward to talking with you in the future.

Sincerely,

Justin Zephyrine.

## Appendix P

### Sample of results from the Mid-Treatment Journal Reflections

*This week, we looked at instructional design models as well as presentation media such as screencast-o-matic and flipsnack as powerful tools for teaching and learning in blended course designs. Considering the common elements of instructional design models, explain how such tools can be used in your blended course.*

In using various presentation media, I gained a lot of insight into the benefits and challenges of using them. I tried PowToon for the first time. It being the first time, I used a template that was available in the app. This made it easier for me to plug in my information into the slides. I found that the visuals and audio of PowToon were also very attractive and upbeat, therefore adding to the appeal of the presentation. I must admit that if I did not use the template, it would have been extremely time consuming to put it together because of the numerous options available for enhancing the slides. Time is not something I have, but I guess the more I use the app the more proficient I might become with it so I don't have to spend hours putting together a presentation.

I also used PowerPoint to do a group presentation. Originally, my group wanted to use screencast-o-matic, but we encountered some problems with installing and using it on the computer at work. But before we switched to PowerPoint, we briefly got familiar with screencast-o-matic and realized how easy it could be to use once you are using it on your personal laptop. In using PowerPoint we discovered that there were still many features in it that we did not know about. One of them was providing a voice-over for the presentation, which is very similar to what screencast-o-matic offers (That was the main reason we decided to use PowerPoint). Amazing how you learn something new all the time with tech tools! We discussed and assembled our critique of a blended course in face to face meetings and on google docs. We then created the PowerPoint with the voice-over for the slides. We had some hiccups with that, but it was a rich learning experience. We learned a lot about the timing of slides, editing of audio files, the quality of audio, proper use of mic, how to imbed video recording (movie maker), planning of slide format and delivery and proper team coordination. The entire exercise was really informative and exciting.

Using these 2 media presentations demonstrated how creative one can be in the online environment in a blended course. It also showed the importance of being mindful about critical elements in your course design. Firstly, the planning stage is extremely critical when using these media in a blended course. Obviously, you need to know how to use software applications. Once that is accomplished you need to know when to use them. You also need to make sure the content and software are properly linked so that students can be efficiently moved through the taxonomies related to your course and lesson objectives. This means that you need to have a good understanding of the instructional context. Secondly, you need to give careful consideration to the materials and activities you use in the blended format. Your objectives, guided by Bloom's

taxonomies, can tell you what activities and strategies might be best accomplished in either a face to face or online session. The creativity of the course facilitator in setting up the sessions will therefore be critical. A third consideration would be selection of resource materials. You need to know what's available and know how to use them so that you can also help your students. Finally, assessment considerations would also be relevant – formative and summative. A blended course gives you flexibility in assessment in terms of time and accessibility. Assessment can be ongoing – session by session, as well as at the end of the course.

All in all, these tools can be very useful in my course. I need to get more familiar with them. I need to get more familiar with other applications as well. Bravery and willingness to experiment is important, as only through experiential learning would I get better at using the applications.

- Participant A.

The group exercise for a screencasted presentation of the critique of a given course considering the common elements of instructional design models was indeed a learning experience. Insights gained can be used for the enhancement of my Masters blended course in teaching social competencies (EDFA 6207).

Firstly to orient the students to the course page, some pictorial that catches the eye and draws student interest is desirable. In this first section a screen cast can be used by way of a power point slide show with embedded audio and video so as to introduce students to the course and to indicate key course elements in a general overview. This helps to invite students to the course and creates an orientation that they may have a bird's eye view of what the duration of the course is about and the basic elements that they can expect and where to find various key features. Because the course is heavily invested in social learning, the video of the team members contributing to course delivery helps to create empathy and break the ice so that all involved can more easily become the desired learning community for quality interaction – the stuff where the learning is to occur.

The course is then laid out by being divided clearly into 12 sessions with topics indicating the main content of the course with explicit dates for sessions and also indicating when assignments and tasks are due. An effort is made to include appropriate technological tools to aid learning to give a lively and interactive tenor to the course. Thus according to the section screen casting can be used if there are asynchronous online sessions carded. Due to the high crime rate and environmental disasters that have been plaguing the country, the online sessions are very much appreciated by students especially those who have to travel far to come to course. In addition students can access the course at their leisure as they are often tired after working all day and may therefore have the liberty to close a time most suitable to them to access the screen cast for that particular section of the course.

The screen cast is a versatile learning tool since photos can be taken of relevant scenes that the lecturer may be referring to and inserted into the slides so that there is no interruption in flow. Students can also have the liberty to stop the slide show if they wish so that they can go over content that they may not have grasped first off. As the screen cast proceeds just as in a face to face class, assignments and group tasks can be given with explicit instructions and deadlines both for students and lecturers so that once a group or individual task is completed and sent to the tutor, the relevant feedback can be given for formative assessment.

Generally then, all the basic features of instructional design can be facilitated by the screen casting tool for the sessions where this is needed. The leeway given to the students as well by this tool as well as its integration with other worthwhile online learning tools can together enhance and transform my blended course.

- Participant C

Reflective Journal: TPACK and COL

As the course continued, I realised that my method of delivery and preparing a blended course design for my subject area are critically important to increase student motivation and also to make content more accessible to students.

The latter I learnt in the TPACK and COL session. The diagram and video for the TPACK model stood out. That is the overlapping centre spot (the sweet spot). They showed me how I can integrate the main elements in TPACK - Pedagogy, Technology and Content to satisfy my different style of learners. I realised then, that part of the control is still in my hands because I know my students. So, it is critical more than ever that I must integrate those main elements to work together when I am preparing my course design.

To integrate those main elements I would use the guided questions below to do a self-assessment:

What I want to teach (concept/skill/content)

How to teach it (strategy/method –pedagogy)

How to deliver (very important 'the partner for support' – so I must appropriately select the tools/platform/software for delivery)

COL is called Community of Inquiry. It is a process of creating a deep and meaningful learning experience within a classroom. Like TPACK there are main elements of the COL that should be developed to satisfy my different style of leaners. However while TPACK elements overlap; in COL these elements are interdependent on each other. The elements are social, cognitive and teaching presence.

To prepare my course design using the COL method, I need to consider the communicate medium highlighted in COL framework diagram given to us as resource material. In addition I would use the guided reflective question below:

What I want to do within in the class (ensuring that all of the three presences are integrated). Examples of some useful tools BBC and Wiki for group work.

- Participant D

Reflective Journal: Teaching Perceptions

Identify one perception you had about blended course designs (or blended teaching and learning). How has this training experience helped to change that perception? How has this change in perception translated to a change in your efficacy regarding blended course designs?

Previously, myself and my colleagues who team-teach the course EDFA 6207, took the easy way out. We had been to BL training before. I think the School of Education was one of the first departments to make the change from totally f2f, to a blended approach. To be perfectly honest, we had no real, deep-seated negative issues with BL – the systematic integration of context, pedagogy and content, was not new to us. This was our daily business, after all. Perhaps because it so closely resembled, at a theoretical and design level, what we were already trained to do, we did not value it enough. Those of us who were technologically inclined, experimented more with the Moodle platform, than others. Everybody else, organized the course in the best f2f modalities – lectures, tutorials, presentations, discussion groups – and used the Moodle platform as a convenient backdrop for posting information, readings and the like.

I guess, to answer your question, if I was to dive down deep and isolate ONE perception that caused this kind of behaviour, it was the position that nothing could beat f2f and that BL was a sort of last resort, or back up for organizational mishaps. By holding fast to such attitudes, we side stepped what was regarded as a very real issue that was always lurking in the background, that to get deeper involved with BL we would need great volumes of time to master the individual technologies and, we were always overworked. So, you could say we made a strategic decision for survival by incorporating BL in our course in a non-painful way – but also in a non-effective way.

How has this training experience helped to change that perception? It did not change my perception in terms of the time that it would take me to even become familiar with a particular tool. I was alternately elated and terrified; particularly in the online synchronous environment where others seemed to be forging ahead and I was always playing catch up. However, I deeply appreciated the fact that we, teaching the same course, were allowed to work together, which we did with, and without, the tutor.

Working with my colleagues was never threatening as we collectively mastered the exercises. Working with the tutor in clinics, also helped to alleviate my reluctance and sundry fears. What has helped me to work on whittling down the perception that BL requires too much of my time is actually attempting to develop a flipsnack for myself – albeit with lots of help and hand holding along the way – the finished product was tangible evidence that I could possibly become more adept at this.

How has this change in perception translated to a change in your efficacy regarding blended course designs? Undoubtedly I am now open to trying out some of the tools in lieu of our traditional slate of written reflections and papers. I am quite eager. What helps, as always, is that I am not alone in this – my colleagues are also eager and we plan to transform the course along more BL-friendly formats.

- Participant J

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**Curriculum Vitae**

# Justin R. S. Zephyrine

27 Alexander Street · St. Madeleine · Trinidad and Tobago · W.I. · (1-868) 319-1417

## EDUCATION

| | | |
|---|---|---|
| Johns Hopkins University Graduate School of Education Baltimore, MD | Doctor of Education (Ed.D.) | 2015 - Present |
| Dowling College, School of Education New York, USA. | Masters of Science (M.S.) | 2013 |
| Dowling College, School of Education New York, USA. | Advanced Graduate Certificate | 2012 |
| University of the West Indies St. Augustine, Trinidad and Tobago. | Master of Arts (M.A.) | 2011 |
| University of the West Indies St. Augustine, Trinidad and Tobago. | Bachelor of Arts (B.A.) | 2007 |

## PROFESSIONAL EXPERIENCE

| | | |
|---|---|---|
| The University of the West Indies Center for Excellence in Teaching and Learning, St. Augustine, W.I. | • eLearning Support Specialist (2014-Present)<br>• Blended Learning Support Specialist (2011-2014) | 2011-Present |
| The University of the West Indies School of Nursing, Faculty of Medical Sciences, St. Augustine, W.I. | • Adjunct Faculty, Course Developer | 2018-Present |

| | | |
|---|---|---|
| The College of Science Technology and Applied Arts of Trinidad and Tobago School of Business and Information Technology. POS, W.I. | • Adjunct Faculty, Course Developer | 2018-Present |
| The University of the West Indies Department of Literary, Cultural and Communication Studies, St. Augustine, W.I. | • Adjunct Faculty, Teaching Assistant | 2011-2013 |
| The College of Science Technology and Applied Arts of Trinidad and Tobago Compensatory Programs and Academic Support Services. POS, W.I. | • Adjunct Faculty, Course Developer | 2011-2013 |
| The University of the West Indies Campus IT Services, St. Augustine, W.I. | • eLearning Administrative Support Specialist (2010-2011)<br>• Clerical and Technical Assistant – Intern (2008 – 2010) | 2008-2011 |
| The University of the West Indies The English Language Foundation Unit, Faculty of Humanities and Education, St. Augustine, W.I. | • Administrative Intern | 2007-2008 |

**PRESENTATIONS/CONFERENCES (Selected)**

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**Technology and the Creative Process in Higher Education Practices: A Case Study for Surviving Lean Times.** (Presenter). 17th Annual ACHEA Conference (2018). Port of Spain, Trinidad and Tobago, W.I.

**The Application of Brain-Based to Tertiary Education** (Co-Presenter with Dr. Genevieve Boucaud, Faculty Development Specialist, The CETL, UWI) - The University of the Southern Caribbean (USC) Annual Teaching Colloquium (2018). USC, St. Joseph, Trinidad and Tobago, W.I.

**Soaring Through Turbulence: Is Blending the Answer?** (Presenter). The Human Resource Management Association of Trinidad and Tobago (HRMATT) Conference (2017). Port of Spain, Trinidad and Tobago, W.I.

**Social Media and Apps for the Higher Education Professional** (Keynote Presentation) – 14th Annual ACHEA Conference (2015). Port of Spain, Trinidad and Tobago, W.I.

**Blended Learning Clinics: An Alternative to Traditional Training Workshops** (Presenter). The Accreditation Council of Trinidad and Tobago (ACTT) – Annual Conference (2015). Port of Spain, Trinidad and Tobago, W.I.

**The Use of Open Educational Resources in ROYTEC** (Workshop Exhibitor). The Commonwealth of Learning (COL) & The School of Business and Applied Sciences (ROYTEC) – (2014). Port of Spain, Trinidad and Tobago, W.I.

**Open Educational Resources in Higher Education** (Workshop Exhibitor). The Commonwealth of Learning (COL) – (2013). Port of Spain, Trinidad and Tobago, W.I.

**Blended Learning: Using Blogs and Wikis for Teaching and Learning** (Workshop Facilitator/Presenter). The Center for Excellence for Teaching and Learning: Teaching and Learning Week. (2012). The UWI, St. Augustine.

**Blended Learning: An Introduction to Google Application in Education.** (Workshop Facilitator/Presenter). The Center for Excellence for Teaching and Learning: Teaching and Learning Week. (2012). The UWI, St. Augustine.

**Camtasia Studio: The Benefits and Challenges of Screencasting in Higher Education**. (Co-Presenter). The Instructional Development Unit eLearning Conference (2009). Port of Spain, Trinidad and Tobago, W.I.

## CERTIFICATION(S)/AFFILIATIONS

**Six Rules to Designing eLearning for Maximum Motivation – Certification**
Training Magazine Network: Path to Expertise

**Basic Computer Programming - Certification**
Maryland State Department of Education Member

**Remote Learner: MOODLE Administration - Certification**
Integrated Open Source Learning Services: MOODLE Partner

**Peer Counseling - Certification**
The University of the West Indies' Peer Counselor's Association

**Social and Personal Development - Certification**
The Neal and Massy Foundation

**Computer Literacy and Training – Certification**
The National Gas Company of Trinidad and Tobago